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ABSTRACT

Papers were presented on these subcategories of the theme of conflicting pressures in postsecondary education: privacy and confidentiality; program analysis, goals, and outcomes; planning, research, and modeling; financing and resource allocation; faculty; and students. Individual topics addressed include: student-faculty interaction; student outcomes; program productivity; vocational-technical and community college program outcomes; language skills; off-campus graduate education; small colleges; state coordinating boards; academic calendars; institutional research; state agencies; graduate medical education; enrollment projection; energy management; tuition; collective bargaining; faculty workload and activity analysis; faculty compensation; sex discrimination; faculty promotion; student satisfaction; attrition; student ratings of instruction; educational quality; and higher education and careers. Additional submitted papers are abstracted. (MSE)

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CONFLICTING PRESSURES IN POSTSECONDARY EDUCATION

Edited by Robert H. Fenske

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16th Annual Forum
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The Association for Institutional Research

16th ANNUAL FORUM

THE ASSOCIATION FOR INSTITUTIONAL RESEARCH

May 3–6, 1976
Los Angeles, California

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1970–Institutional Research and Communication in Higher Education
1971–Institutional Research and Institutional Policy Formulation
1972–Reformation and Reallocation in Higher Education
1973–Tomorrow's Imperatives Today
1974–Public Policy: Issues and Analyses
1975–Information For Decisions in Postsecondary Education
1976–Conflicting Pressures in Postsecondary Education

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Preface and Acknowledgements

Conflicting pressures have always been a fact of life for higher education. The history of higher education has been replete with such conflicts as institutional autonomy versus state control and open access versus maintenance of high academic standards. However, now the theme of conflicting pressures is particularly timely. Seldom have contending forces been so directly opposed as at present. Collective bargaining, for example, represents the breakdown of collegiality and shared authority, the importation of management systems from the business world exemplifies the failure of fiscal accountability in higher education, and the growth of centralized governance and coordinating agencies signifies that the timeless conflict of institutional autonomy versus state control has reached the crisis point.

The papers selected for this publication reflect the forum theme in a wide variety of ways. They relate to conflicting pressures involving faculty, students, finances, and many other aspects of higher education and the ways in which planning, modeling, and institutional research can deal with those problems. Selection of the papers to be published in the 1976 proceedings not only involved recognition of intrinsic quality but also consideration of overlap and duplication. Many fine papers were necessarily excluded simply because topics overlapped and constraints of space and cost prevailed.

Having been involved with AIR publication activities for many years as a contributor, board member, and now as editor, it is most gratifying and encouraging to observe both the growing interest and participation of newer AIR members and, as well, the continued activities of institutional research luminaries.

While it is true that an honorary (that means unpaid) editorship is one of the most thankless tasks in the professional world, it does carry with it a feeling of accomplishment when the publication is produced. However, those who reviewed manuscripts for actual selection or rejection are among the unsung heroes in our association. Profound gratitude is due the following members of the Proceedings Evaluation Committee: Clarence Bagley, Mary Jo Clark, William Fenstemacher, Thomas Freeman, Gustav Froehlich, Gerald Kissler, James Martin, and Ernest Palola. Overall guidance to the editor has been expertly provided by the AIR Publications Board. Actual publication could not have been accomplished without the direct and invaluable assistance of Jean Chulak, the association's indefatigable executive secretary, and her staff–Grace Mayfield, Margaret E. Rassoul, and Dominic Tombro–at the Florida State University, as well as Fred Gaudet and Marcy Ruggiero of Arizona State University.

Arizona State University

1977

Robert H. Fenske

CONTENTS

INVITED PAPERS ON CONFLICTING PRESSURES IN POSTSECONDARY EDUCATION

SOME REMARKS TO THE FORUM

David Mathews 1

PRESIDENTIAL ADDRESS: KNOW THEN THYSELF

Bernard S. Sheehan 3

PRIVACY AND CONFIDENTIALITY

Donald L. Reidhaar 9

CONGRUENCE

Dale Parnell 15

PROGRAM ANALYSIS, GOALS, AND OUTCOMES

CRITERIA WARRANTED FOR EVALUATION OF ACADEMIC PROGRAMS AT THE UNIVERSITY OF TOLEDO

Richard R. Perry and Douglas A. Lind 19

OUTCOMES OF THE ACADEMIC AND NONACADEMIC COLLEGE EXPERIENCE RELATED TO FREQUENCY OF STUDENTS' INFORMAL INTERACTION WITH FACULTY

Ernest T. Pascarella and Patrick T. Terenzini 27

THE PROGRAM PRODUCTIVITY RATIO: TOWARD A BETTER MEASURE OF ACADEMIC DEGREE PROGRAM EFFICIENCY

Jim Nichols 35

OUTCOMES OF VOCATIONAL-TECHNICAL-TRANSFER PROGRAMS AT COMMUNITY COLLEGES, TECHNICAL SCHOOLS, AND SIMILAR TYPES OF INSTITUTION

Richard J. Noeth and Gary R. Hanson 41

HIGHER EDUCATION GOALS OF FACULTY AND STATE REPRESENTATIVES

John Lee 47

SYSTEMWIDE LANGUAGE SKILLS EXAMINATION: A LOOK AT THE UNDERLYING FACTORS

James E. Prather and Glynton Smith 55

CONFLICTING PRESSURES IN OFF-CAMPUS GRADUATE EDUCATION

F. Craig Johnson 61

SMALL COLLEGES: SOME GUIDELINES TO SURVIVAL

Thomas R. Harvey 65

ORGANIZATIONAL RELATIONSHIPS BETWEEN INSTITUTIONS AND STATE COORDINATING BOARDS

Denis J. Curry 69

REALLOCATION OF TIME AND RESOURCES: THE NEW OSHKOSH CALENDAR PLAN

W. Sam Adams and Timothy H. Hoyt 71

FUNCTIONAL TENSIONS IN THE UNIVERSITY

Robert E. Roemer 77

PLANNING, RESEARCH, AND MODELLING

ACADEMIC PLANNING AND INSTITUTIONAL RESEARCH–CONFLICT OR COOPERATION?

Richard R. Perry 83

ACTIVITY ANALYSIS OF GRADUATE MEDICAL EDUCATION

K. L. Kutina, E. A. Bruss, L. E. Lee, Jr., and H. Emmons 87

CONFLICTING PRESSURES THAT IMPINGE UPON THE OPERATIONAL EFFECTIVENESS OF INSTITUTIONAL RESEARCHERS: CHALLENGES TO THE PRACTITIONER

Joseph L. Gubasta 93

SOURCES OF CONFLICT BETWEEN INSTITUTIONAL RESEARCHERS AND DECISION MAKERS

Joseph E. Gilmour 97

STATE AGENCIES, POLICY STUDIES, AND RESEARCH

John Folger 101

THE USE OF ANTHROPOLOGICAL FIELD METHODS AS A MEANS FOR CONFLICT REDUCTION IN INSTITUTIONS OF HIGHER EDUCATION

John P. Bean 105

THREE YEARS INTO THE FUTURE AND BEYOND WITH A POSTSECONDARY DEMAND AND ENROLLMENT MODEL

C. Neil Russell and B. B. Hoffman 109

ASSESSING THE IMPACTS OF FUTURE STUDENT DEMAND: AN APPLICATION OF A DEMOGRAPHICALLY DIFFERENTIATED PROJECTION MODEL

Robert D. Newton 113

COMPUTER CARTOGRAPHY: A NEW TOOL FOR INSTITUTIONAL PLANNING

John W. Creswell and Burl E. Self 119

A RESOURCE ALLOCATION MODEL FOR THE OREGON STATE SYSTEM OF HIGHER EDUCATION

Stefan D. Bloomfield and Freeman Holmer 123

COPING WITH ENERGY AT CALTECH

Philip G. Rector 127

MULTIPLE PERSPECTIVES EVALUATION: A STRATEGY FOR DEALING WITH CONFLICTING PRESSURES

Ernest G. Palola and A. Paul Bradley, Jr. 131

ENROLLMENT PROJECTION STRATEGIES IN AN UNCERTAIN ENVIRONMENT

Donald M. Norris. 137

FINANCING AND RESOURCE ALLOCATION

GOAL-ORIENTED RESOURCE ALLOCATION FOR UNIVERSITY MANAGEMENT

Frederick A. Rogers and Richard L. Van Horn 141

ECONOMIC BENEFITS OF PROFESSIONAL SCHOOLS

James R. Montgomery, Gerald W. McLaughlin, Beatrice T. Mahan, and Pat E. Morey. 147

". . . SIX IS FATAL . . ." A CASE STUDY OF INTERINSTITUTIONAL COST COMPARISON

William L. Tetlow and John S. Chase. 151

ANALYSIS OF STATE FINANCIAL SUPPORT OF HIGHER EDUCATION: PITFALLS AND PROMISES

Marilyn McCoy and A. Lawrence Fincher. 159

CONFLICT IN STUDENT OUTPUT STUDIES: NATIONAL AND STATE VS. LOCAL NEED

John A. Lucas. 165

THE ORGANIZING, FINANCING, AND IMPLEMENTING OF EXPANDED ADULT AND CONTINUING EDUCATION FROM STATE AND REGIONAL POINTS OF VIEW

Frederick H. Jackson 169

PRESSURE POINT ON CAMPUS: ACADEMIC PROGRAM PLANNING AND RESOURCE ALLOCATION IN CONFLICT WITH THE BARGAINING TABLE

Raymond N. Kieft. 171

CONCEPTS OF TUITION AS CONFLICTING PRESSURES IN PUBLIC POSTSECONDARY EDUCATION

Jane Louise Johnson 175

FACULTY

FACULTY LOAD AND FACULTY ACTIVITY ANALYSIS: WHO CONSIDERS THE INDIVIDUAL FACULTY MEMBER?

J. Stanley Laughlin and Vernon A. Lestrud 179

FACULTY REWARDS, FACULTY ACCOMPLISHMENTS, AND SEX DISCRIMINATION

Donald P. Hoyt and Michael O. Stewart 183

FOUR-YEAR STATE COLLEGES: THE SCOPE OF COLLECTIVE BARGAINING

Gerald H. Kramer and John W. Creswell 189

A THEORETICAL APPROACH FOR INTERNAL ALLOCATION OF ACADEMIC PERSONNEL RESOURCES

D. R. Coleman and J. R. Bolte 193

IMPROVING INSTITUTIONAL ACCOUNTABILITY THROUGH FACULTY DEVELOPMENT: REACTING TO CONFLICTING PRESSURES IN POSTSECONDARY EDUCATION

Robert G. Simerly 199

AN ANALYSIS OF PHILOSOPHIES CONCERNING FACULTY PROMOTION AND RELATED IMPLICATIONS FOR THE INSTITUTION

John R. Bolte, M. H. Thomas and D. R. Coleman 205

STUDENTS

CORRELATES OF STUDENT SATISFACTION OUTCOMES: A STATEWIDE PERSPECTIVE

E. Grady Bogue, G. Clifford Gillespie, and William E. Troutt 213

THE ASSESSMENT OF STUDENT AND FACULTY EDUCATIONAL ORIENTATIONS: A RESEARCH STRATEGY FOR CONFLICT ASSESSMENT

Joan S. Stark and Barry R. Morstain 217

THE RELATION OF FRESHMEN STUDENTS' SOCIAL AND ACADEMIC INTEGRATION TO ATTRITION .

Patrick T. Terenzini and Ernest T. Pascarella 225

DIFFERING VIEWS ON THE CRITERIA AND PURPOSES OF STUDENT RATINGS OF INSTRUCTION

Edward L. Delaney, Jr. and Edgar E. Coons, Jr. 233

STUDENT EVALUATION OF INSTRUCTION: A VALIDITY ANALYSIS

Thomas R. Pezzullo, John V. Long, and Roy M. Ageloff 237

A NEW CAVEAT: LET THE BUYER BE AWARE

Larry G. Jones 241

EXCELLENCE AND EQUALITY, A STUDY OF ACCESS AND DROP-OUT: THE EXPERIENCE OF THE OPEN UNIVERSITY OF THE UNITED KINGDOM

Naomi E. McIntosh and Alan Woodley 245

DIRECTIONS OF HIGHER EDUCATION TOWARD CAREERS

Karen H. Knierim 251

ABSTRACTS OF ADDITIONAL CONTRIBUTED PAPERS 259

SOME REMARKS TO THE FORUM

David Mathews
Secretary of Health, Education, and Welfare

I would like to discuss with you some of the limits of quantitative work, an issue to which I assume you are as sensitive as anyone. In fact, I assume you are even more sensitive to it.

I have entitled my remarks "The Case for Poetry." Poetry represents a form of communication that proceeds by a different, almost antithetical, definition from that used in normal communications. Poetry violates nearly every rule of sentence construction we use in prose, but nonetheless, poetry still communicates. In fact, poetry communicates certain things better than prose.

Recently, I remarked within our department that there may be reason to question the current orthodoxy in all fields; namely, that statistics give us facts, that facts give us answers, and that answers solve our problems. A few days later the assistant secretary, who is, in effect, the vice president for institutional research in HEW, came to me in some state of agitation. He realized that my question posed certain difficulties for his line of work. In a way, it's like saying the earth is round. Statistics give us facts; facts give us answers; answers solve our problems. If that is not true, what is true? We will come to what is true in a minute, but first, I want to explore with you my disquiet with the syllogism, if it is one.

The first problem concerns the use of statistics. In a way, quite frankly, statistics are the instant coffee of American thought. We live with complexities too enormous to comprehend. Our ambitions carry us in fields too vast for us to navigate, and, quite naturally, we as human beings try to get some hold on what is unholdable. Our device for that—our modern alchemy—is the statistic; the statistic purports to tell us of a reality we wish to comprehend, but cannot grasp. Statistics are, by that very definition, a substitution for reality; for the mentally lazy, they are an easy crutch. It is very convenient to forget that statistics are approximations and nothing more than approximations, of a reality that exceeds our capacity to define. In that sense, they are a kind of instant coffee of intellectual work in this country. That is fine as long as you remember you are drinking instant coffee and not the real thing.

The second set of problems concerns the next element in syllogism: Facts give us answers. If by facts we mean the approximations of reality that are inherent in statistics, I would advise caution. It is all too easy for the policy maker, who is not a statistician or familiar with institutional research, to leap over the Grand Canyon that separates the approximation from the reality and to assume that what you have reported in figures is, indeed, the real world. But that kind of leap of faith should be limited only to Superman or Superwoman. It is not a leap for mortals to make, but policy makers make it every day. Statistics have a seductiveness which invites that kind of violation of the laws of gravity.

A related problem is that quantitativism is not a neutral carrier. The very form of the art distorts reality, much in the same way a recording of a musical instrument inevitably distorts the quality of the sound. There is no such thing as a neutral carrier, and the form of your art, it seems to me, distorts reality in a way that becomes obscure with about the second passage of the data.

Moreover, certain realities lie outside the grasp of quantitative methodology. Let's take, for example, what we want in higher education. Here is what the news release might say:

"Secretary Mathews suggested that, even though colleges and universities were institutions, they were useful to the public not because of their institutional nature, but because of their community qualities: their capacity for caring and reflectiveness, their ability to promote the critical uses of the mind and the development of a sense of social and personal responsibility."

What is the quantity for caring—quarts, bushels? How do you measure reflectiveness? How do you even approximate reflectiveness—brainwaves per second, or a sense of social responsibility? These realities fall outside our ability to comprehend by any quantitative method available to us. That is a reason to question the second part of the syllogism that facts give us answers.

We all believe the clincher: Answers solve problems. Why sure, answers solve problems. In our century and in our generation, we believe that with increasing assurance and with the same degree of justification as Columbus' peers held to the theory that the earth was flat. If our recent experience tells us anything, it is that the process by which we solve a problem, the process—the touch, the tone, whatever—by which we implement a policy has as much, if not more, to do with the efficacy of the answer as the answer itself. To believe that answers solve problems is to fly in the face of the recent experience of this Nation and of modern man. Those who take approximations for true reality bind themselves to a blind creed. So, statistics gives us facts—I doubt it. Facts give us answers—hardly. Answers solve problems—absurd on the face of it.

I can cite some illustrations, not in your field, of what has happened when we failed to question that proposition. There is a very large welfare system in the City of New York that has had its troubles. A good documentary on the difficulties of the New York welfare system was produced for television by a gentleman named Weisman. The welfare system, in its most basic form, was devised to make people feel better about themselves and then to behave in a different way—essentially, in a more self-reliant way.

The device for promoting that purpose is the transfer of money from one individual to another. But, we should not confuse the method with the objective which is for an individual to have a greater degree of pride in himself or herself, a greater sense of his or her

own capacity, and a greater ability to perform as a functioning member of society.

Some years ago, that system was organized in a way we now think is old-fashioned. Each case worker did everything needed for a limited number of people who were clients. Case workers interviewed people when they came into the system and made a judgment about whether they were eligible or not. They helped people fill out the proper forms. When the check came along, they made sure the right person got the check, and they talked with the person about the results.

As more forms and more checks came from different directions and as the number of welfare recipients filled whole rooms, someone decided to analyze what was happening. To that brilliant mind it occurred that functions could be separated for better organization. Instead of all case workers performing the same processes of helping with forms, handing out checks, and dealing with cases, the case workers were assigned specialized tasks. Some handed out forms; others took in the forms. There was no need to increase the staff as the case load grew because the office was now functionally organized. The change made great sense. But, it resulted in the worst debacle in the history of this country. There was a reality we could not measure.

The important thing in the old system was not that a person handed out a form and took it in, but that a person, as a human being, made an investment in another human being and expressed some concern. When we changed people into form manipulators, all of the chemistry disappeared. They just said, "Sit down and take that form. Don't ask me any questions that you've got to see the other guy about." We invaded an unseen, but powerful, reality—the chemistry of human beings. In the quest of progress, we destroyed that chemistry and wasted a lot of money. What was worse, we did an incredible injustice to the most vulnerable people in our society.

My other illustration comes from St. Louis. There, we are now dynamiting to the ground a large public housing project built some thirty years ago. At one time, St. Louis was filled with untidy, blighted neighborhoods. The buildings were decrepit and old; streets were falling apart. We decided to make the area tidier, and we moved in with massive investments to building fine public housing. To be more efficent, we built tall, straight housing. We passed zoning laws to remove the unsightly taverns, laundries, and grocery stores.

The most amazing things happened. The crime rate went up almost, they tell me, in exact proportion to the height of the buildings. People behaved in what seemed to be the strangest, most bazaar fashion. They began to destroy the buildings, kicking holes in the walls. The parents complained about their relationship with the children. We suddenly found out that from thirty stories up your kid looks like an ant, and it is difficult to know what is happening. People didn't talk to each other because the gathering places—the bars and the grocery stores—were gone. In a very logical way, and in the name of progress, we destroyed the community. The reality there—the reality of the community—was beyond our ability to quantify.

Even though you are under great pressure to deal with the quantifiable aspects of your institutions, I think the public wants most from institutions not what you are driven to measure and report, but qualities that are essentially more characteristic of communities than institutions.

If institutions such as colleges and universities do not care, what real need do we have of them? If they are not capable of nurturing the young, what real justification is there for them? If they cannot promote the quality of reflectiveness in a way more diligent than would occur normally, why do we need them? If their ability to foster the development of the human mind and spirit is not greater than would occur in everyday circumstance, why make that kind of investment? If they do not produce people with a social and personal sense of responsibility that mandates their intelligence be applied to crucial human problems, what is the purpose of the effort?

Everywhere I go in this country, I see an enormous challenge to what we thought in past decades about the ability of institutions to help people. I am coming to the conclusion that the healing force for humankind is not in the institution, but in the community. The institution is only a productive social instrumentality to the extent it can approximate the caring, compassion, nurturing qualities of the community.

I was in Hell's Kitchen a month ago looking at a program for mental patients—schizophrenics—who had come out of the wards of New York State's hospitals. Those patients had been unable, we thought, to cope with the demands of functioning in society and, as a result, we had institutionalized them. In the process of being institutionalized, they became less mobile, less confident and more costly to maintain. We had to try something else.

In the halfway house, the people are not called patients; they are called members. The staff spends their time trying to recreate community among those members. They have made members out of the patients, and they have made a community out of what had been an institution. Those people not only care for themselves, but even in the competitive environment of New York, they are productively employed in industry.

It may be that the salvation of humankind is in the community. If that proposition is true, and to the extent that it is true, it poses an enormous problem for those who are in your profession. If, in the process of saving our education, we bureaucratize it, we will destroy the community capable of the salvation of the institution itself. If, in the process of dealing with all of the public pressures upon us, we respond with—as I wrote in one article—a lilliputian nightmare of forms and formulas, we will have died at the hands of our own salvation.

I think the essential question—and I'm sure you are discussing it in this program and addressing it eloquently—is a very simple one. What can you do for poetry?

Thank you.

PRESIDENTIAL ADDRESS: KNOW THEN THYSELF

Bernard S. Sheehan
President, The Association for Institutional Research

The theme of this year's Forum is *Conflicting Pressures in Postsecondary Education.* Since the fundamental role of institutional research is to aid decision making, we come as no strangers to conflicting pressures. Decision making itself is primarily the choice among alternatives—conflicting more often than not. Within this theme, it's not our role as institutional researchers to resolve conflict but rather to facilitate—to facilitate, if we can, a confluence out of conflicting pressures.

While reflecting on what I should say in the context of the theme, it occurred to me that we institutional researchers offer assistance to those who must resolve conflicting pressures, but in so doing, we must not bring our own conflicting pressures into the decision-making arena. In other words, we do our job best if we start from a position of knowing our role and the context in which it is to be acted out. The ancient words of the oracle, "Know thyself," which have been repeated so often down through the ages, seem most appropriate to our situation, and I was reminded of the poem which begins:

> Know then thyself, presume not God to scan;
> The proper study of mankind is man.
> Placed on this isthmus of a middle state,
> A being darkly wise and rudely great:
> With too much knowledge for the Sceptic side,
> With too much weakness for the Stoic's pride.
>
> Alexander Pope, "An Essay on Man—Epistle II"

These words, and the conflicting pressures they describe, demonstrate that, as a subset of humanity, institutional researchers will, in the normal course of events, be subjected to conflicting pressures arising out of their nature—pressures best mitigated if we take the advice of the ages and practice introspection which leads to a better understanding of ourselves, our role, and the larger stage. Over the past two decades, institutional research has struggled with the conflicting pressures of postsecondary education and those on and within the profession itself. I believe that we have made, within institutional research, remarkable progress in a short time; not so much yet in defining a role, as in performing a role—a role which, because it had to be done, was done, and which, in the doing, has become better understood.

Introspection demands a little more humility and honesty with ourselves than we normally find comfortable. We must not take ourselves too seriously, nor too lightly, nor confuse ourselves with others. Individually and collectively, we are relatively new to our business; we have much to learn and much to live. I propose we continue this morning what some will see as a subtheme of all fifteen previous Forums: that process of self-examination which, when applied to our institutions rather than to ourselves, is said to be our trademark.

What might I say about institutional research that will help us know ourselves better? Let me suggest the following agenda:

1. Review the context in which decisions are taken, since that's often where our work must be effective.
2. Consider certain communication difficulties which hamper our work but still might assist our introspection.
3. Ask the question, if we know ourselves well enough to say it briefly.
4. Confront the reality of being ourselves.
5. Cast an eye ahead to see if we are led to any priorities for tomorrow.

The Decision Context

Conflicting pressures in the decision-making process arise from sources which, of course, are legion. However, there are two extreme views of the decision process that are perhaps fundamental to an institutional research perspective on decision making: people make decisions best if they are informed; and, alternatively, people make decisions best in a give-and-take mode based on experience and compromise. The struggle between these two perspectives perhaps began when our very first ancestors came out of the primeval lagoon. For many of us, these ideas were brought into focus at last year's Forum when Frank Schmidtlein reported his work on decision-making paradigms in higher education. The first concept is sometimes referred to as the rational or comprehensive and is associated with the notions of modern management tools and techniques, program budgeting, systems analysis, decision analysis, information systems, and so on. The second view is the remedial, or incremental, which holds that significant planning and management decisions in postsecondary education are based on compromise and consensus as they traditionally are in democracies.

The conflicting pressures which arise are perhaps highlighted if we compare the following traits of the two concepts. It would be instructive, I believe, to ask yourself, as we list these traits, whether you basically agree or disagree with one or the other. I think you will be surprised at how often you find yourself on both sides of the following arguments. Let's begin.

From the comprehensive perspective, change is seen as intensifying the problem of prediction of student enrolment and other factors, thus, creating the need to plan. Now, moving over to the incremental concept, change is seen as a factor which makes analysis complex and unreliable, and since plans are rapidly outdated, decisions must be incremental. With respect to deadlines, decision makers resist committing themselves in advance of deadlines in order to keep their options open and to maintain flexible positions. On the other side, the comprehensive point of view is that deadlines require the *a priori* analysis of events in order to identify and deal with the critical variables. Still on the comprehensive side, causal relations are thought to be known, or at least discoverable, through analysis; whereas causal relations from the incremental point of view need not be known

because effects are discovered through response to decisions. Outcomes and the means to achieve them are determined simultaneously through bargaining; whereas, back on the comprehensive side, we say that a statement of goals and measurable outcomes is essential to assess the extent that objectives are accomplished. Staying on the comprehensive side a moment more, we note that precision and manipulation of data require quantification of variables in order to develop effective models of reality. Alternatively, the incremental side fears that an unsophisticated emphasis on quantification can bias analysis by too great a concentration on the more easily quantifiable variables. Still on the incremental side, conflicting pressures are fundamental and inevitable, and goal clarification only intensifies conflict, so due process is seen as an important means of conflict management.

The above illustrates stereotyped extremes of attitudes towards what makes for good decisions, and most people in most situations would be somewhere in between. Nonetheless, the juxtaposition of these concepts—placing them in positions of conflict—is a particularly helpful way of assisting better understanding of the decision-making process. In practice, the decisions which emerge will owe much to a synthesis of factors to which both comprehensive analysis and consensus seeking have contributed. It is making a contribution to the attainment of that synthesis which is important to our role as institutional researchers. Such a contribution is premised on knowing ourselves and understanding the decision context in which we work.

Communication Difficulties

Communication difficulties confound much of our work in institutitonal research and are deterrents to the evolution of institutional research—even to the evolution of a clear and simple description of the field. Hence, pursuant to our task, to know ourselves, we will explore three notions, fraught with conflicting pressures, which illustrate communications difficulties: (a) comparative information, (b) language, and (c) technical concepts.

Comparative Information

A common perspective on the conflicting pressures that surround the notion of comparative information is the following. On the one hand, you have the technicians' fascination with the truly enchanting problems of logic and mathematics; that is, the information/mathematics/management science topics which can become captivating for those who are analytically inclined and gifted. On the other hand, you have the decision maker's urgent need for information—a need fired by what seems so often to be an unrealistic expectation that with comparative information will come the total answer. Since outcomes measures, standards, and absolutes are hard to come by in education, comparative analysis is essential to prudent and politically viable decision making. Nonetheless, uninformed or inexperienced decision makers will not readily find, even at great expense, the comparative data they want, nor will the sort of tentatively comparable information typically available be appreciated.

It is interesting to note that comparisons are undertaken in order to uncover differences. There is no comparison between identical items. And yet, comparisons are frequently challenged because the organizations or activities being compared are said to be non-comparable. One frequently hears that you can't compare apples to oranges, but apples and oranges clearly can be compared in terms of cost, weight, caloric content, nutritional values, amount of vitamin C, and so on. The standard of measure is the fundamental principle of "comparability," not what is being measured.

Technical work in the area of producing comparable information out of compatible information systems is a high priority activity which is fundamental to the ultimate production of information for comparative analysis and, hence, intelligent decisions. However, persons receiving comparative information will not use it well for decision making if they do not, at the same time, have the necessary collateral knowledge. That is, unless one has an understanding of the educational system involved, comparative information is of little value. It will not likely lead to valid insights toward better decisions; it will most likely be used incorrectly. Thus, comparative information suggests at least three conflicting pressures or priorities: technical questions, supply of information, and, assistance to the decision maker in initially formulating the problem and ultimately understanding and evaluating the alternatives presented.

Language

Every profession and discipline needs a technical language. The real impact of this occurred to me about ten years ago when I moved from a teaching and research position in a highly technical field to become an administrator in a liberal arts university. I remember how inarticulate I was without my jargon, which was of little value in my new circumstance. There is, or course, a bad connotation to technical jargon, and we can readily agree that we owe it to our colleagues outside institutional research not to obscure the obvious with jargon. Nonetheless, we need amongst ourselves a technical language which allows us to communicate quickly, effectively, precisely and at the highest intellectual and professional level, as well as at that level appropriate to the problem or circumstance under consideration.

However, until the technical language is developed, we practitioners may have to live with, even invent for special purposes, some jargon which will help ease communications. Let me give you an example from our office which perhaps illustrates the dilemma mentioned by Pope: "With too much knowledge for the Sceptic side, With too much weakness for the Stoic's pride."

In order to have an omnibus expression to encompass a myriad of confusing myths on our campus, we invented what we can the "which side of the ICLM problem." The ICLM is the induced course load matrix, which I suppose everyone knows tells you the teaching load generated in each academic teaching department by so many students registered in a particular school or college. The ICLM is one of those perfectly simple, elegant tools, which has had its power greatly multiplied by being formalized in a way that permits practitioners, such as us, to exchange ideas on it and to develop a better understanding of its possible applications, thus allowing each of us to get a new, clearer, more focused picture of an aspect of the operation of our own campus.

Getting back to the "which side of the ICLM problem," picture in your mind a black box with ICLM written on the side facing you. On the left side, note the

word "department" and on the right side the word "school," to mean the school of student registration. We now have the essential elements—the department or discipline, the school of registration, and the ICLM, which is the relationship in the middle.

Most people realize that resource questions are on the left-hand side of the ICLM; that is, resources are planned for and used by academic departments. Hence, discussion of resources, budgets, historical costs, and anticipated resource requirements are on the left side of your picture of the ICLM. Discussions about undergraduate students relate to the right side of the ICLM; that is, students register in schools or colleges, not in departments or disciplines. Some discussions, like those involving costs per student or revenues per student, normally require the speaker to note both sides of our black box—costs on the left, students on the right, and the relationship between them, the ICLM, in the middle.

First in our own office, then among those senior administrators we work with most often, we found that many situations, otherwise difficult to explain or describe, quickly became clear and fun to all if they were described simply as a "which side of the ICLM problem."

We have to move on to other topics, but I suggest that if you haven't done this before, you make a mental note to think about some problem in your office from the perspectives described above to see if it isn't a "which side of the ICLM problem." You may be surprised at how many there really are.

Technical Concepts

Another aspect of the communications problem is the lack of a systematic or ordered collection of technical concepts which have a fundamental relationship among the set. Before we go too far, let's agree on the meaning of "technical"—that is, of, or having to do with, an art, science, discipline or profession—there is no particular connotation of statistics, psychology or computers. Each discipline must evolve and develop its basic tenets so it becomes a distinguishable body of knowledge and a field within which problems are solved and new knowledge found. At this stage of our development, I'm not decrying the lack of a science of institutional research. What I am suggesting is that within the very wide set of loosely related topics, fields, and activities which might be called institutional research, there are many subfields, subtopics, which some of us may claim are institutional research, but which others would view simply as topics in education, or post-secondary education, or management, or political science, or financing, or architecture, or information science, and so on. My observation is that in many of these areas, the technical and uniquely institutional research component is lacking.

Let me give an example. Recently, we were asked to recommend a financial plan for allocation of public funds among my province's eleven universities and public colleges. While this is not really a new problem—there are in Canada and the United States at least sixty governments faced with the same problem which they have been solving each year—many of our colleagues, including Lyman Glenny (as we heard at the St. Louis Forum), have done extensive and excellent work on this topic. However, the fundamental framework, the structured technical concepts from an institutional research perspective, are not there to apply to each new problem and circumstance. Communication among practitioners is difficult. We are left with attempting to use the concepts more appropriate to other people and professions concerned with, in this case, the problem of distribution of public funds to institutions. These include journalists, legislators, professors, accountants, and so on.

That institutional research has not developed a comprehensive array of tools and techniques for its multitudinous tasks is not yet a lamentable state but a challenge which makes this field stimulating and exciting. But there is a need for more research and more reporting of the technical problems. Especially as the interest in institutional research spreads from country to country, there is a need for more people to work on building general conceptual frameworks, enunciating principles, structuring, simplifying and teaching. Teaching and research are natural activities in any office of institutional research. In fact, teaching and research in an OIR are not so much specific activities as an attitude or a state of mind, born in an academically stimulating environment and sustained by fundamental human curiosity and creativity. It is, for any intellectually alive individual or group, the essence of "Know then thyself."

The Three Hat Theory

The challenge was to describe the role of an institutional research practitioner briefly. In answer, let me propose the *three hat theory*, which says that, in responding to the need for management information, institutional research practitioners must be sufficiently versatile to assume the perspectives of three people: first, the person asking for information and choosing to use it for decision making, say, the president; second, the institutional research analyst, wearing his own hat and translating information needed into terms which will admit a solution by those means available—that is, taking into account imprecisions of the question, limitations of the data base, available tools and techniques, time, talent and other resources for proper analysis; and third, the technician to whom the detailed aspects of gathering information are clear and the meaning of the resultant data is unmistakable.

The three hat theory says that the institutional research practitioner must be capable of wearing the hat of the decision maker in the sense that the institutional researcher must understand the request as it is seen by the decision maker and, further, must be capable of responding with information, alternatives and strategies in a way that permits the decision maker to use them. Also, the institutional research practitioner must be capable of wearing the technician's hat in the sense that the institutional researcher must direct the studies, analyses, and other activities of the technician and be able to appreciate the results—that is, gain the new insights, use the ideas, and appropriately formulate the resultant information. In other words, the three hat theory says that the institutional researcher is, in the sense illustrated, a synthesis of the decision maker, the analyst and the technician.

Stress

Before we consider the practical question of being ourselves, there is a vista on institutional research which, in today's circumstance, bears a few moments'

attention. Hans Selye, professor and director of the Institute of Experimental Medicine and Surgery at the University of Montreal, is recognized as the world's leading authority on stress. The dedication of his new book, *Stress Without Distress*, caught my eye—"To those who try to find themselves." It has long been my opinion that an important contribution of institutional research is to assist an institution in reducing destructive effects of stress, both on the institution and on those who work there. Of course, an institution without some stress would not be a very intellectually stimulating place, but when the effects of stress become counterproductive to the institution and unhealthy for individuals, the institution is out of harmony with itself and its environment, and we experts in institutions have a responsibility to suggest corrective action.

Selye describes stress as the non-specific response of the body to any demand made upon it. These are the bodily changes produced whether a person is exposed to nervous tension, physical injury, heat, cold—these changes which are common to all agents are called stress. Stress is what we are left with after we disregard the specific response caused by the stressor: typically, high blood pressure, cardiac accident, ulcers, mental disturbance.

In considering the role of institutional research in reducing the harmful effects of institutionally induced stress on people, we may define stress in the institution in a way analogous to Selye's definition for the biological body. Thus, for example, in our terms, if an institution experiences sharp enrolment increases in a year of tight budgets, the specific response to this demand is either increased class sizes or increased teaching loads or both. The stress caused by the demand—that is, the non-specific response—may be a wide variety of other results, for example: a deteriorated atmosphere for student learning and faculty research, increased activity toward faculty unionization, strike by the support staff, and so on. These latter results of an unanticipated enrolment increase are not unique effects caused by this factor specifically. A number of other conflicting pressures could cause the institution to adapt by precipitating these same non-specific results.

Institutional research has an important role to play in two areas—in two apparently conflicting areas. We want to increase stress of the sort that allows people to attain happiness, intellectual satisfaction and excellence, and similarly for institutions, we want to participate in those activities which allow the institution to attain that level of vitality that is in balance with the institution's ability to support, and which yields results which are in harmony with institutional objectives. Secondly, we want to participate in and support decision making that does not fuel counterproductive activities harmful to the institution and the people.

How, then, can we have a role in promoting healthy stressors and warding off undesirable side effects? First of all, we have to recognize that we share in the responsibility for a happy, healthy institution, moving toward its objective without destroying itself or its people. Recognition of a responsibility does not qualify one to give advice. In the case of the stress reduction role, it may be that many of us, pursuing our more traditional roles, have not gained the experience nor expertise become involved in many aspects of institutional life—evaluation, academic and financial planning and management, space and facilities planning, and information systems development. Hence, institutional researchers come to know their institutions as well as anyone.

It seems to me that we have been discussing a notion that is important to the continued maturation of institutional research. Awareness of ourselves, the context of our professional activities, and our experience with many individual aspects of institutional life should lead us to recognize the total view of the institution as a human organization. We, as a group of experts need to study our institutions as integrated, living bodies, and to come to know more about their states or preconditions which will determine response to stress. We need also to know more about the adaptive mechanisms the institutions will use to live with or shred stress. In summary, institutional researchers should become more involved in the evaluation of institutions from the total perspective of how they cope with stress and how they can best respond to a stressor in a way that increases institutional vitality and effectiveness.

Be Then Thyself

The idea of knowing one's self and appreciating the conflicting pressures which swirl around us is sterile until we make some commitment to how we will act, how we will influence and be influenced by those conflicting pressures. Reflecting on a behavior pattern or on a code or on a standard of professional ethics is important. It helps us both as individuals and as members of the profession to confront the realities of day-to-day conflicting pressures with our well-thought-through perception of institutional research and a sense of what behavior is appropriate for us individually.

Interpretation of behavior which is consistent with professional standards must, in our case, be individual. It seems to me to be more important to recognize that we do belong to a professional group and that this very fact commits us to establishing within our own minds the sorts of activities which are consistent with good professional practice and those which are not. Conflicting responsibilities are not unique to institutional research, but they require of us as professionals a responsible response.

The nature of our jobs means that few of us work as individual practitioners or consultants. Most of us work in an institutional-type environment. Nonetheless, institutional research is an individual activity, and individuals do have responsibility for their professional actions. Still, our institutional perspective—the need for us to keep faith with our own institution—sometimes can be a point of conflict. We work, for example, in a day or over a period of time with many clients, most within the institution but some from outside. What can they expect of us? Can each expect that we will, for example, respect the confidentiality of information we come to know as a result of working on one client's project? Will we be less than objective in the provision of information in order to help achievement of results we know are thought desirable by our institutional superiors? Can we participate in the development of institutional strategy to obtain objectives that (a) we don't agree with, or (b) are conflicting with those of

other clients? Clearly, there is not a profession-wide answer to these questions—no right or wrong position which our colleagues could legitimately impose on us. However, these sorts of questions need debate and require individual reflection.

Institutional research is what we do, not what we say we do, hope to do, or write about. Thus, in being ourselves, in reflecting on what we feel we ought to be, we come to understand better and, hence, to know ourselves—again—as individuals, as well as a profession.

Priorities for Today

So what is to be done and what are the priorities? We have to manage our institutions and systems of post-secondary education even more effectively. I would offer the following three items for your consideration:

1. The institutional research staff role in planning and management must be seen to be at least as important in periods of constant and perhaps declining enrolment as in the boom of expansion. Today's problems and those ahead are demanding, and we seem to have less flexibility. Institutional research is not only the data provider in the narrow sense but a vehicle for the provision of the most useful information and strategies for decision making.

2. Beset with conflicting pressures, all levels of post-secondary education benefit from institutional research assistance. Traditionally, many offices of institutional research have concentrated on institution-wide aspects and, of course, work at that level must not be abandoned. However, institutional research skills and insights should be deployed with more vigor in both directions from this perspective; that is, there should be increased emphasis on institutional research useful to deans, department chairmen and individual professors. At the same time, institutional research expertise is needed to assist those decisions that relate to problems shared by a group of institutions or system-wide problems shared by governments and institutions.

3. Institutional research must continue to mature. We must not, however, with maturity lose the zest that has characterized the past two decades of institutional research. The arts and sciences of institutional research need continuing and concentrated work by people around the world. The Forums (in fact, the Association) and the quarterly series, *New Directions for Institutional Research*, are all important components.

We have to achieve that synthesis within institutional research practice that welds the state of information sciences with the humane arts of the possible.

I would like to end by following the advice of Secretary Mathews and add a little poetry to our deliberations:

> Know then thyself, presume not God to scan;
> The proper study of mankind is man.
> Placed on this isthmus of a middle state,
> A being darkly wise and rudely great:
> With too much knowledge for the Sceptic side,
> With too much weakness for the Stoic's pride,
> He hangs between, in doubt to act or rest;
> In doubt to deem himself a God or Beast;
> In doubt his mind or body to prefer;
> Born but to die, and reas'ning but to err;
> Alike in ignorance, his reason such,
> Whether he thinks too little or too much;
> Chaos of thought and passion, all confused;
> Still by himself abused or disabused;
> Created half to rise, and half to fall;
> Great lord of all things, yet a prey to all;
> Sole judge of truth, in endless error hurled;
> The glory, jest, and riddle of the world!
>
> Alexander Pope, "An Essay on Man—Epistle II"

PRIVACY AND CONFIDENTIALITY

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Introduction

President Sheehan, Vice President Firnberg, and members of the Association for Institutional Research: I am delighted to have this opportunity to share with you some thoughts on the topic of privacy and confidentiality. On behalf of my institution, the University of California, and on behalf of the organization largely responsible for my appearance here today, the National Association of College and University Attorneys, I would like to extend best wishes for a most successful conference.

We have been hearing a great deal about privacy of late, and two major federal statutes recently have been enacted under the banner of privacy—The Federal Educational Rights and Privacy Act of 1974,[1] more commonly known as the "Buckley Amendment", and the Privacy Act of 1974.[2] Before further considering those statutes, however, it may be helpful to review briefly the common law and constitutional law right of privacy.

Common Law Right of Privacy

The evolution of the common law of the right of privacy is traceable largely to a seminal article, *The Right to Privacy*, by Samuel D. Warren and Louis D. Brandeis, published in the 1890 issue of *The Harvard Law Review*.[3] Incidentally, that article is regarded as the single most outstanding example of the influence of legal periodicals upon the American law. Speaking in words which might have been written today rather than in the last century, Warren and Brandeis declared:

> The intensity and complexity of life, attendant upon advancing civilization, have rendered necessary some retreat from the world, and man, under the refining influence of culture, has become more sensitive to publicity, so that solitude and privacy have become more essential to the individual; but modern enterprise and invention have, through invasions upon his privacy, subjected him to mental pain and distress, far greater than could be inflicted by mere bodily injury.[4]

Since that time, nearly all states have recognized the legal right of privacy. As analyzed by the late, great authority on the law of torts, Professor and Dean William L. Prosser, the law of privacy has developed as four separate torts, falling in these categories:

"1. Public disclosure of embarrassing private facts about an individual.
"2. Publicity which places a person in a false light in the public eye;
"3. Intrusion upon a person's seclusion or solitude or into his private affairs; and
"4. Appropriation for the advantage of the wrongdoer of an individual's name or likeness."[5]

Perhaps the most dramatic example of the first type of invasion of privacy, public disclosure of embarrassing private facts, is a 1931 California decision often referred to as The Red Kimono Case.[6] The plaintiff had been a prostitute and the defendant in a sensational murder trial. After her acquittal, she abandoned her former life, became rehabilitated, married, and led a life of rectitude in respectable society among friends and associates unaware of her earlier career. Several years afterwards, the defendant made and exhibited a motion picture called "The Red Kimono" which enacted the true story, used the plaintiff's name and ruined her new life by revealing her past to the world and her friends. The law was equal to finding a remedy for that outrageous conduct.

The second form of privacy, publicity which places a person in a false light in the public eye, typically involves such things as spurious books or articles or fictitious testimonials.[7]

The next form of privacy is essentially a commercial tort—appropriation, for the wrongdoer's benefit or advantage, of a person's name or likeness such as to advertise the defendant's product or to accompany an article sold or for other business purposes.[8]

The remaining form of privacy, intrusion upon a person's seclusion or solitude or into his or her private affairs, normally has to do with physical intrusion, such as unauthorized entry into an individual's home or an illegal search of his or her possessions. It has been extended, however, to cover such things as electronic eavesdropping. In any event, there must be a prying or intrusion into something which is entitled to be private.[9]

Thus, it is apparent that, with the exception of intrusion into private affairs which is in a rather special category, all of the common law forms of the right of privacy require publicity; that is to say, something in the nature of widespread public disclosure.

Constitutional Right of Privacy

In recent years, there has been a rapid development of a constitutional right of privacy. Beginning with a 1965 decision of the United States Supreme Court holding that a state law prohibiting the use of contraceptives was a violation of a zone of constitutionally protected privacy,[10] the constitutional right of privacy has been extended to cover other highly personal matters, such as abortion[11] and overly broad public disclosure of personal financial affairs of public office holders, candidates and their families.[12] A 1972 amendment of the California Constitution added privacy as one of the basic, inalienable rights of all people of the state.[13] And, of course, the Fourth Amendment prohibition of unreasonable searches and seizures and the Fifth Amendment privilege against self-incrimination are rooted in particular aspects of personal privacy.

Recent Privacy Legislation

Recent legislation, however, extends the concept of privacy well beyond either the common law or the constitutional right of privacy. The Buckley Amendment[14] has as its major purposes permitting students (or parents of minor students) access to educational records, per-

mitting students the opportunity to challenge the accuracy of such records, and preventing disclosure of educational records to others without the written consent of the student. Clearly, the statute goes far beyond traditional notions of the right to be let alone, or to be free of public broadcasting of private facts, or to be free from interference with highly personal matters.

The Privacy Act of 1974,[15] in part a response to the excesses of Watergate, has these as its announced purposes:

> to promote governmental respect for the privacy of citizens by requiring all departments and agencies of the executive branch and their employees to observe certain constitutional rules in the computerization, collection, management, use, and disclosure of personal information about individuals . . . . to promote accountability, responsibility, legislative oversight, and open government with respect to the use of computer technology in the personal information systems and data banks of the Federal Government and with respect to all of its other manual or mechanized files . . . . to prevent the kind of illegal, unwise, overbroad, investigation and record surveillance of law-abiding citizens produced in recent years from actions of some over-zealous investigators, and the curiosity of some government administrators, or the wrongful disclosure and use, in some cases, of personal files held by Federal agencies . . . . to prevent the secret gathering of information on people or the creation of secret information systems or data banks on Americans by employees of the departments and agencies of the executive branch . . . . to set in motion for long overdue evaluation of the needs of the Federal Government to acquire and retain personal information on Americans by requiring stricter review within agencies of criteria for collection and retention . . . . (and) to promote observance of valued principles of fairness and individual privacy by those who develop, operate, and administer other major institutional and organizational data banks of government and society.[16]

A very large order!

Without going into detail, the key elements of the Act are provisions for—

- An individual's right of access to his or her own file maintained by federal agencies
- An individual's right to correct errors in his or her file information or to insert in the file a formal statement dissenting from its accuracy
- Establishment of new legal rights to sue agencies for access to a file, for its correction or for damages incurred as a result of incorrect data in the file
- Criminal penalties for maintaining secret data systems and for intentional unauthorized disclosure of personal information
- Limitations on disclosures of individually identifiable information by federal agencies
- Limitations on the means and purposes of Federal data collection from individuals
- Published notice of the existence and scope of federal data banks holding individually identifiable information
- Establishment of a Federal Privacy Protection Study Commission.

As an aside, I expect that a great many persons experienced their first real exposure to the Privacy Act when they began to prepare their tax returns this year and read the instructions which now accompany the all too familiar tax form 1040. As a part of those instructions, the Internal Revenue Service sets forth a prominent privacy act notification, namely, a notice which contains the invaluable piece of information that, "The principal purpose for soliciting tax return information is to administer the Internal Revenue laws of the United States." Even something as noble as privacy legislation, it seems, can generate trivial information.

Possible Further Legislation

1. H.R. 1984. Shortly after the Privacy Act of 1974 was signed into law, Congressmen Goldwater and Koch introduced H.R. 1984 (one might ponder the title) as a proposed comprehensive approach to privacy issues. The bill would regulate the uses and sources, the retention, storage and handling of personal information by a wide variety of private and public organizations, presumably including colleges and universities. It would cover all information collected about an individual and specify what personal information could be collected, maintained or used, how it could be collected, what dissemination would be permissible, and under what conditions. The bill would also require the filing of a public notice by the employer indicating the types of records maintained, who controls them, the users, and the categories of information contained in the system.

2. The Privacy Protection Study Commission. Further, the Privacy Act of 1974, in addition to regulating information handling practices by federal agencies, established the Privacy Protection Study Commission to make a study of data banks, automated data processing programs and information systems of governmental, regional, and private organizations in order to determine the standards and procedures to be enforced for the protection of personal privacy. One of the main tasks of the commission is to recommend to the president and the congress the extent to which privacy safeguards should be applied to the information practices of state and local governments and organizations in the private sector.

3. State Legislation. In addition, a great many state legislatures are now considering various privacy bills.

Privacy Legislation Versus Confidentiality In Academic Personnel Practices

In 1975, the California Legislature passed, but the governor vetoed, proposed legislation with substantive provisions taken from the Privacy Act of 1974.[17] The bill was drawn to apply to state agencies and instrumentalities, including the University of California. The governor's veto was based principally upon the very significant costs and the bureaucratic structure which would have been required to implement the bill. But, even in vetoing it, Governor Brown expressed his support of the objectives of the bill and indicated that he would in the future approve appropriately drawn privacy legislation.

The University of California took a strong position in opposition to that bill largely because it would have destroyed confidentiality in the peer review system essential to the university's academic personnel process.

As is the case in most major research universities,

the University of California assures confidentiality to those involved in the faculty review process in order to ensure that evaluations are entirely candid and decisions are made on the basis of the most complete and reliable information. The University of California has a carefully developed academic personnel review process, including many important safeguards for the individual, which we believe is in large measure responsible for building a faculty of outstanding quality.

Briefly stated, the process is as follows (and bear in mind that this applies with respect to an appointment or promotion to a tenure position and to the appraisal of nontenured assistant professors for retention): In the recommendation phase, a personnel file is assembled by the academic department containing information on the candidate, including confidential letters from extramural sources (and these are nominated in part by the candidate). The file materials evaluate teaching, research and creative work, professional activity and university and public service. The department chairperson informs and counsels the candidate about the review process and gives him the opportunity to add information to the file. Thereafter, the department reviews the case and makes a recommendation which is transmitted to the appropriate dean and chancellor. The candidate is informed of the tenor of the departmental recommendation and is given the opportunity to submit a response to the department's action; any such response becomes a part of the file.

To begin the review phase, the dean reviews the file and the department's recommendation. The dean, in turn, makes a recommendation to the chancellor. The chancellor's office refers the file to the standing personnel committee of the academic senate (which we call the budget committee). That committee nominates to the chancellor an ad hoc review committee, the membership of which is confidential, composed of faculty members within and without the candidate's department. After considering the ad hoc committee's report, the personnel committee of the academic senate submits its recommendation to the chancellor.

During the decision phase, the chancellor receives the entire file. Upon request of the candidate, the chancellor's office prepares a summary of the aggregated reports, together with the reasons for the proposed decision. Before a final decision is made to terminate or not to reappoint, the dean, departmental chairperson and candidate are informed. The candidate and departmental chairperson then have the opportunity to respond in writing and to include additional documentation for the chancellor's consideration.

If the candidate is denied tenure and believes the process has been unfair or prejudicial, he or she may appeal to the Academic Senate Committee on Privilege and Tenure, which reviews the case for procedural error or the use of impermissible criteria. In doing so, the privilege and tenure committee may hold hearings and has access to all pertinent material in the file. As the final appeal step, the chancellor reviews and acts on the recommendation of the privilege and tenure committee.

As an additional safeguard, the university recently revised its procedures to provide that the candidate is entitled to be informed of the substance, but not the source, of confidential evaluations. Thus, the entire substantive content of the file is available to the candidate, save only for the identification of the sources of confidential peer reviews.

Such a system, we strongly believe, provides ample protection to individuals under consideration. The large number of persons involved in the process, the reviews at various levels (with different persons involved in the recommendation, review, decision and appeal phases), the candidate's opportunity to nominate evaluators, the candidate's right to make additions to the file after having been told of its contents and before a final decision is made, the fact that decisions are based solely on materials in the file, and the candidate's right of appeal as to procedural irregularity or consideration of impermissible criteria—all of these serve as effective checks and balances designed to prevent confidentiality being used to cloak abuse.

The case for confidentiality in the faculty review process was most ably expressed in a recent paper by William P. Gerberding, executive vice chancellor at UCLA, in these words:

> The primary cost (of an open files faculty review process) is that under such circumstances it will be difficult and in many instances impossible to get candid peer evaluations from authorities inside or outside of the institution. Some individuals will simply refuse to provide such evaluations. Others will do so but in such a bland manner as to offend no one and, in the process, provide very little useful information or evaluation. Some others, I fear, will actually provide misinformation, or evaluations that are not really believed by the person providing them.
>
> It seems to me to be both naive and unfair to demand that evaluators speak openly and, in effect, for the public record in personnel cases. It is naive because many simply will not do it, for whatever reasons. It is unfair because the desire for confidentiality is not based on ignoble or improper impulses or considerations. Those providing the evaluations deserve to have their own privacy respected. It is a difficult and thankless task to render judgment about the professional competence of one's peers. To subject such evaluators to controversy and perhaps even lawsuits is simply unfair.[18]

And, as Vice Chancellor Gerberding cogently observed:

> The privacy of individuals is not endangered at all by confidential academic files; indeed, it is protected by them. The fact is that the opening of such files would not result in more privacy for the individual concerned, and the privacy of those who have participated in the development of the files would unquestionably be violated by opening them up.
>
> Moreover, something more than the privacy and well-being of the individual and the evaluators is at stake here. Of equal importance, the temper and tone of the academic and scholarly community is at stake. The level of personal rancor and rivalry would be regrettably increased if the entire process of making these delicate and difficult judgments were to be made public. In varying degrees in American institutions of higher learning, an atmosphere of civility and collegiality exists, and this would be seriously jeopardized by

> disclosing the identity of persons making crucial evaluations available to those being evaluated. Adversarial relationships rooted in anger and hostility would be sharply increased. The only alternative would be a misleading and dishonest blandness in the face of which serious and responsible judgments would be difficult to achieve.[19]

What is here, at issue, goes to the very heart of the university: The quality of its faculty. At the University of California, we most earnestly insist that it would be a great loss to the institution and to society if open files legislation were to take such a form as to preclude the university from obtaining the most candid and reliable peer evaluations. Most emphatically is this so when confidential evaluations are used only as a part of a carefully structured faculty review process with ample built-in checks and balances designed to prevent any abuse of confidentiality.

Conclusion

Surely all persons of good will would endorse the concept that there should be appropriate restraints on the collection and use of personal information, and that individuals should not be victimized by the use of secret files. Excesses of the Watergate era have created a great impetus for legislation with the high purpose of advancing rights of the individual. It must be kept in mind, however, that legislation for the laudable purpose of advancing privacy can, unless carefully drafted, have the effect of defeating essential confidential evaluations and communications. Even in the case decided at the height of the Watergate scandal, that having to do with the production of the White House tapes, the United States Supreme Court observed that the importance of confidentiality in communications between government officials and those who advise and assist them ". . . is too plain to require further discussion." And the Court observed further:

> Human experience teaches that those who expect public dissemination of their remarks may well temper candor with a concern for appearances and for their own interests to the detriment of the decisionmaking process.[20]

I submit that the need for confidentiality in the faculty peer review process is no less compelling. Now is the time when the higher education community should make this need for confidentiality known and should seek to assure that it is accomodated in privacy legislation. It has been said that "those who love the law and sausage should never see either made." But if important educational interests are to be served, the higher education community must be involved as privacy bills are considered. I would most earnestly commend this matter to you for the active attention of the Association for Institutional Research.

Thank you for your kind attention.

Footnotes

[1] 20 U.S. Code Sec. 1232g.

[2] 5 U.S. Code Sec. 552a.

[3] 4 Harvard Law Review, 193 (1890).

[4] Warren and Brandeis, *The Right to Privacy*, 4 Harvard Law Review 193, 196 (1890).

[5] Prosser, *Privacy*, 48 *California Law Review* 383 (1960).

[6] *Melvin v. Reid* (1931) 112 Cal. App. 285, 297 Pac. 91.

[7] Prosser, *Privacy*, 48 *California Law Review* 383, 398-399 (1960).

[8] Ibid. pp. 401-402.

[9] Ibid, pp. 389-391.

[10] *Griswold v. Connecticut* (1965) 381 U.S. 479.

[11] *Roe v. Wade* (1973) 410 U.S. 113; *Doe v. Bolton* (1973) 410 U.S. 179.

[12] *Carmel-By-The-Sea v. Young* (1970) 2 Cal. 3d 259, 466 P. 2d 225.

[13] California Constitution, Art. I, Sec. 1.

[14] 20 U.S. Code Sec. 1232g.

[15] 5. U.S. Code Sec. 552a.

[16] Senate Report No. 93-1183, 4 U.S. Code Congressional and Administrative News (1974) 6916-6917.

[17] California Senate Bill 852 (1975/76).

[18] Remarks delivered November 5, 1975 to the Association of American Medical Colleges, Washington, D.C.

[19] Ibid.

[20] *United States v. Nixon* (1974) 418 U.S. 683, 705.

CONGRUENCE

Dale Parnell
Chancellor, San Diego Community College District

Some of the best social philosophy of our day is contained in comic strips. Recently in *Peanuts*, Charlie Brown, wearing a baseball hat, was talking with his peer-group.

> You know what our team lacked last year? It lacked organization! Well, this year it's going to be different! I've written down the name of each player and what position he plays, and I've attached the papers to a clipboard. . . . and if that isn't organization, I don't know what is!

I'm sure there are a lot of clipboards in your organizations. I know there are in mine. In the field of education, we do tend to write down a lot of things, and sometimes they even improve the way we play. We do try to keep in mind, however, the sarcastic slogan somebody coined about the Quartermaster Corps: "Government property is issued in order that a proper record may be kept thereof."

Clarifying goals and purposes may be the most important task of any leader or administrator in a public service agency. The second most important one would have to be the development of congruence between the clarified goals and what we are actually doing. But keeping this concept of mission in mind at all times—through the day-to-day routine of planning, budgeting, scheduling, and all the other operations—is where we all fall down once in a while. We write a set of plans for accomplishing our goals, but then what happens to the plans?

Planners, like architects, can create a structure, but they cannot predict how people will behave inside it. An organization is made up of people, and I'm sure you agree that people can't be fitted into neat little categories or made to operate all in the same way at the same time. And, goodness only knows, they can't be predicted! We have to work with what we have, and that's people. To paraphrase Abraham Lincoln, "The Lord must have loved postsecondary educators, or he wouldn't have made so many of them."

It is interesting that you should have "conflicting pressures" as the theme of this conference. I always thought that such pressures were only in jobs like mine. I have just given an annual report to our Board of Trustees on the operations of the San Diego Community College District and how we did on the goals we set for ourselves 12 months ago. You know, I have come to a conclusion about our preoccupation with goals. I sometimes think it is the educator's intellectual sauna. We go in, and we do it; we feel warm all over; it makes us feel good; and then we go right back out and do what we intended to do in the first place. Well, in the report to the trustees, we tried to correlate our activities with our goals, to see how we did, and to set some new goals for ourselves for next year . . . keeping *congruence* at the top of the list.

But the interesting thing is that we also talked about conflicting pressures—in this case, within an organization like our community college district. I think there is a "web of tensions" that exists in any organization, and those of us in higher education share many of the same tensions.

A couple of the ones I spend a lot of time thinking about are applicable only to us lucky people in California institutions, like collective bargaining and the conflict between that new system and the collegial approach that most of us were used to. According to a recent article in the *Chronicle of Higher Education*, more of you may be engaged in that conflict in the near future. In the article, authors Ladd and Lipset stated, "By the beginning of 1976, bargaining agents had been chosen to represent the faculties of 294 institutions with over 410 campuses" (1976, p. 11). They went on to say that their own surveys, as well as surveys by the Carnegie Commission on Higher Education and the American Council on Education, found that "the percentage of faculty members favorable to bargaining has been growing steadily," and that "the growth of faculty unionism in an era of increasing austerity promises to be the source of the most important intramural conflicts in academe in the next decade" (p. 11).

I wish I could report, "We've been through it and it's nothing; it doesn't hurt a bit." But we are still in the preliminary stages in California, and there are a lot of ground rules to be worked out before this July when our new law becomes fully operational. We will still be negotiating this summer under the old rules. (After we've had some experience, we'll be happy to share our expertise, and our bruises, with you.)

Some of the other strands in that web of tensions, which we share with all of you, include (a) taxes or tuition vs. increased demands on the organization, (b) central administration vs. dispersed authority to divisions or departments, (c) affirmative action vs. meritocratic system, (d) competition for funds among various departments or colleges, (e) keeping good communications with your people vs. too many memos and reports and too many meetings.

I still think the major strand in this web of tensions, however, is congruence between our needs and goals, and our activities. Many of the things we do are right, and we do them well, but the question is whether they should be done at all. Are they the things we ought to be doing? We are efficient and effective in the things we do, but how effective are we at doing what needs to be done? Are we accomplishing our higher priorities? A beautiful example of conflicting pressures and lack of congruency occurred not long ago when California's Governor Brown and the legislature decided to put a cap on the funding of the community colleges, to try to limit the growth of

adult education. There was the conflict: what the faculty and staff thought they ought to do, what the public though we ought to do, and what the governor thought.

A lot of people around the country these days seem to be asking the same question we asked: "What's Jerry Brown really like?" As one who's been there, I can say that the community colleges—and the farmworkers—got a lot of the governor's attention last year. And, I have to say that, personally, I agree with him on a lot of points. He's asking the tough questions that we all should have been asking ourselves, and that's what a politician is for. He said, "Education is the state's biggest growth industry," and "Belt-tightening should begin with those with the biggest belts." He asked, "Why can we afford to teach mother macrame at night, but not teach Johnny to read, write, and think for himself during the day?" He said he is "committed to learning . . . not to pouring money down this complicated pipeline" (which he claimed not to understand). I'm sympathetic with him and what he is saying about the great needs in elementary education. We should indeed be asking the people what is important to them—what they are or are not willing to pay for with their taxes.

I have to say, however, that we in the community colleges didn't agree with what the governor did about his problem. His cap on the funding of community college enrollment was applied in the summer but was retroactive to April, when our fiscal year started, and not just on adult education but on all of our enrollment. We had some pretty rough moments. Our budget had been worked out, and our enrollment projections and staffing projections were down and locked. We were preparing for the usual state funding on the 10 to 20 percent growth that we usually have. We had a lot of unlocking to do in a hurry that summer. We cut out some classes, rearranged and combined a lot of classes, and our board transferred some local reserve funds to pay for the enrollment excess we had already picked up in summer school.

But, basically, the governor was right in asking for congruence between what we said we were doing and what we actually did. We felt the tragedy would come if no one answered his questions, and if no one went to the people to find out what they thought. Our board of trustees took what I think is a unique step of going to the citizens to find out what they thought about adult education, instead of just sitting and talking with educators!

Are we offering frills? Should we charge more fees or tuition? What kinds of courses should be added or deleted? These were the questions asked in seven public hearings. More than 1400 people came to tell us what their classes meant to them, sometimes in voices that were faltering or accented with the inflections of Boston, Oklahoma, Mexico, or Hungary. They asked the question, Is education only for the rich, the wellborn, and the able? and they told us that it is the marginal classes that bring people back to education, people that were forced out, thrown out, or dropped out. A crafts teacher got a chuckle out of all of us when she said, "You tell the Governor he is getting more dollars back in taxes on the sale of rope for macrame than he is spending on the classes." We learned a lot last winter at those hearings. We learned that the people of San Diego take their adult education seriously. They know what they want, and they want to be there.

My thesis is that we must continue to examine what we are doing in education. Today's students may have outgrown the colleges. It has been said that they may need a more experience-oriented, less textbook-oriented kind of education. Caroline Bird, in *The Case Against College*, said that her thesis is that "college is good for some people, but it is not good for everybody. The neatest way to get rid of a superfluous 18-year-old is to amuse him all day long at a community college while his family feeds and houses him. This is not only cheaper than a residential college, but cheaper than supporting him on welfare, a make-work job, in prison, or in the armed forces" (1975).

We want higher education that will make a difference to our community. Education can no longer operate by itself. The old concept of medieval German universities just doesn't work anymore. It "ain't happening" in the monasteries! We must break down the snobbishness of the universities and encourage community-based education. We cannot seclude ourselves on a campus and isolate ourselves from the real world. If I were building a new college today, I would never build a large campus. The community ought to be the campus. Emerging all over the country are open campuses, colleges without walls, and external degree programs. Where's all the demand coming from? I think that young people have discovered the lack of congruence between what we say and what we do, and the demand is bubbling up from all kinds of people: older people, the young, the nontraditional students, as well as the traditional ones.

Where does what we teach the students fit in? English literature? Where does that fit into our students' lives? Most of the major concerns in our society in 1976 have no home in the modern college curriculum. Where is the home in the curriculum for environmental education? Is it in chemistry? biology? Where is the home for consumer education? Is it in business? social sciences? psychology? Where is the home for intergroup human relations? for helping people get along with other people? Where is the home to teach people about getting along in their local communities? voting on tax increases? running for school boards? dealing with planning commissions? Where is the home in the curriculum to help a person become a lifelong learner? to improve his memory? to speedread? We leave these vital things to private entrepreneurs and continue to insist on meeting the student at the point of faculty and administration needs, not at the point of his or her needs.

We are flying into the last quarter of this century. What should we be teaching our young people? Are we meeting the needs of our society, or are we meeting the needs of 1915, when most of our high school graduation requirements in this country were written? In other words, are we meeting the needs of 1915 or the needs of the 1980s, 1990s, and the year 2000?

Just what are some of the differences in the needs of citizens today? Well, there was no planning commission in 1915. Nobody gave a damn what you did with your land, but today's society does. Governments were close to the people in those days; the county seat was important in people's lives. Today's governmental entities are huge and often far away. We have credit cards, installment buying, income tax, and on and on. We have changed from an agricultural society to a

blue-collar society to a white-collar society.

In family after family, you could ask the question: How far did your father go in school? How far did you go? You would get the same answers over and over again. And it has all happened so fast—within one generation. We haven't kept in synchrony with the times, and our institutions have not kept in synchrony with the needs of a changed society. The needs have changed, but the institutions have not.

The concluding thought that I would like to leave with you is a step into the future, the urbanized future that most of us are living in today. Governor Hugh Carey of New York said recently that, in the 70s, the new "Okies" are the urban poor. That's a rather harsh statement, but it was intended to draw attention to the problems, not only of New York City, but of all the American cities today. His point was that the conscience of America in the 70s must be, not on the farm poor, as it was in the 1930s, but on the problems of the urban poor, the urban dislocated, and the ailing cities.

We have witnessed, in the past 30 years, the largest migration in history in a limited time span, with more than 30 million people having moved from rural areas to the cities. Although the major problems of the cities also exist in the smaller communities, they are on a reduced scale, and the more crowded areas often tend to produce lessened communication, distrust and feelings of fear and resentment.

Therefore, I think we are forced to agree with Governor Carey that the plight of the ailing cities is one to which we should be giving great attention. Today's post-industrial society is a very different world from the one in which our parents grew up. In that world, more than half the people in America lived on farms. The government recognized the importance of that large segment of that society and responded to its needs with the Land Grant Act and the Rural Extension Act. The Land Grant Act of 1862 left a priceless legacy of great colleges and universities all over the United States. The University of California and the University of Illinois are two outstanding examples. The Rural Extension Act of 1914 provided for county agents in every state whose job it was to keep up with the latest technology in farming and show farmers what could be done. These men helped to bring America the highest agricultural productivity the world has ever known.

All of these services were performed through the county, which was one of the most important levels of government in this country until this century. As people moved out of the farms and rural areas and enlarged the population of the cities, there should have been a realization of the decline of the county and the emergence of the city. Even now, the importance of the city, and city government, has not been allowed to displace in importance the traditional role of the county.

I propose that it is time to turn our attention from the byways of America to the freeways and superhighways. I propose that attention be turned from a Rural Extension Act to an Urban Extension Act in order to deal with the problems that a metropolitan America has brought us. An Urban Extension Act would bring to bear the facilities and resources of the federal government—that in an earlier time were devoted to rural society—on the problems of a densely crowded, urbanized America.

City governments could form alliances with the community colleges and universities, as the counties did with the land-grant colleges, to bring to the people of our cities the education so desperately needed. Title I of the Higher Education Act provided a substantial amount of money for this purpose, but unfortunately, most of the money has gone into the graduate schools of the universities for research. I think it's time we stopped researching the problems of the cities and did something.

In San Diego, we developed such a project in conjunction with the city and the federally funded Model Cities Program. We have just completed an Educational Cultural Complex, in the heart of an economically depressed part of San Diego, that will provide vocational training, basic and academic education, meeting rooms, a public library, and a 300-seat theatre. All are intended to serve as a "one-stop" educational center for meeting the needs of the community and its citizens in a creative, innovative way.

This is the kind of program I envision for the cities of America—one in which city governments, community colleges, and the colleges and universities would join together in efforts aimed at an urban society and toward producing a new generation better able to cope with the strains and demands of modern life. In this post-industrial society, where physical labor has been greatly reduced by knowledge and technology, we owe our citizens a chance to enter that society, a chance for fulfilling employment, and a chance to lead meaningful, successful lives. To aim for anything less is risking chaos.

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CRITERIA WARRANTED FOR EVALUATION OF ACADEMIC PROGRAMS AT THE UNIVERSITY OF TOLEDO

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There is every indication that the evaluation of academic programs both from internal and external sources will receive increasing attention in the future. There are already indications that state agencies are beginning the process of program inventory, a basic step in this review. It may be that in the future systematic review will be conducted each year as budgets are prepared.

The Ohio legislature in the recent session adopted language in House Bill 155 that states clearly that the general assembly is interested in having the board of regents evaluate the performance of academic programs of state-assisted institutions of higher education.

The selection of criteria utilized in evaluation is critical. A list of criterion statements thought to be useful in evaluations of academic programs was compiled by a committee selected jointly by the deans of the several colleges and the Office of Academic Affairs at the University of Toledo. (Refer to Figure 1.) These statements were developed from materials on hand, from accrediting agency information, and out of the experiences and inquiries of the committee.

Criteria used currently tend to fall into the categories of cost benefit or enrollment-driven models. A cost benefit model is one in which the economic advantage attributable to the program is the same as the benefit or service offered by the university through the particular program. An enrollment-driven model assumes that a particular funding base is determined and, as the program increases or decreases in full-time-equivalent student size, the funding tied to the program is also changed. It is assumed, in the enrollment-driven model, that if it costs X dollars to educate n FTE students, it will cost $2X$ dollars to educate $2n$ FTE students.

Criteria of this nature are important and are required by an important funding agency of The University of Toledo, namely the state of Ohio. The intent of this study was to attempt to develop other criteria that are also important in program evaluation.

The study was undertaken with the knowledge that other colleges and universities have been at work on this or similar problems in the immediate past. Among several has been the effort of those working through the National Center for Higher Education Management Systems (NCHEMS) at Western Interstate Commission for Higher Education (WICHE). The excellent work reported under the title *Outcome Measures and Procedures Manual,* Field Review Edition May 1975, is certainly a model that many will want to consider (Micek, 1975).

An additional notable evaluation system was the Higher Education Measurement and Evaluation kit, produced under the direction of C. Robert Pace (1975). The system makes it possible to evaluate the effectiveness of an academic program or an entire college in terms of information about the development, progress, and attainment of students and the educational experiences, processes, and context which affect student development. The information supplied by use of the kit proposes a reasonable baseline against which performance and characteristics may be compared.

The NCHEMS model proposed offers three major areas of evaluation: (a) student growth and development measurements and procedures, (b) new knowledge and art forms measurements and procedures, and (c) community development and service measurements and procedures. The strengths of the NCHEMS model and that of Pace's kit are well known to institutional research personnel. They are worthy of considerable attention on the part of any institution seeking to develop its own system of evaluation of academic programs.

Interest at the University of Toledo was developed through an understanding that the academic community of the university would have an opportunity to build its own concept of criteria warranted for the evaluation of its programs. Once these had been established, the university would take on the task of comparing the criteria with those developed at other selected campuses. The approach was taken deliberately in order to elicit interest and support on the part of students and faculty.

Those experienced in evaluation understand that the word criterion is "usually associated with the selection process; we talk for instance about how well college admissions tests predict the criterion grade point average or how well employment tests predict criteria of satisfactory job performance" (Anderson, Ball, Murphy, and Associates, 1975).

The construction of criteria in a proper context is to achieve proper application of those criteria in the evaluation of academic programs. This requires careful identification of objectives for the programs and the near complete assurance that those objectives are congruent with the expectations of the public to be served by the programs.

Procedure

The list of 33 criterion statements was developed by the committee and distributed to all department chairpersons at the University of Toledo and to the 1,116 students receiving degrees in June 1975. Department chairpersons responded for each program offered by their department at each of the degree levels. The College of Business Administration, for example, offers a BBA and MBA in marketing, thus the chairperson of the marketing department responded to the criteria at both the baccalaureate and master's levels. The students were asked to indicate their degree levels on the

questionnaire.

A total of 140 responses were received from the department chairpersons and 272 (24.4 percent) from the graduates. The response rate for the graduates varied from 13.3 percent for those receiving law degrees and 14.4 percent for those receiving associate degrees to 28.4 percent for those receiving master's degrees. Sixty-three percent of the graduates who responded received a baccalaureate degree. There was no follow-up campaign to attempt to elicit a greater response, and no inducement was offered for responding to the instrument.

Comparison of Response

The responses were scaled with "extreme importance" equal to 1 and "no importance" equal to 5—thus, the lower the mean score, the more important the respondents as a group rated the criterion.

Among the department chairpersons, "service level for which the graduates are qualified" was the most important criterion, and "extent to which the program meets the stated objectives" was the second most important criterion.

Among the students, "extent to which students perceive the faculty as being supportive of student needs" was considered the most important. The second most important criterion, in the students' view, was "service level for which the graduates were qualified".

The mean responses for the two groups were ranked from high to low and Spearman's coefficient of rank correlation was determined to be .811. The null hypothesis that no correlation exists between the two response groups was statistically tested at the 5 percent level and rejected. The conclusion is that a positive relationship exists between the ratings of the criteria for the two response groups.

A Factor Analytic Solution

A correlation matrix was developed which showed relationships among the 33 criterion statements for the combined responses of the department chairpersons and the spring 1975 graduates. With so many variables involved, it was difficult to obtain any kind of visual picture of the interrelationships of the data. Therefore, it was desirable to determine what latent factors or dimensions were involved in the data.

A method for determining these relationships among variables is through factor analysis. Factor analysis can be used to reduce a large number of variables into a few interpretable constructs. The 33 criterion statements represent the variables, and a factor is a resolution of a set of these variables in terms of new categories called factors. A method for highlighting the relationship within factors is to rotate the coordinate axis in n space. This rotation does not change any of the relationships, but it tends to make the results more interpretable. The most widely applied rotation technique, and the one utilized in this analysis, is the varimax rotation, in which the principle is to simplify the factors rather than the variables.

Application of Factor Analysis

It was possible with nine factors to explain 57.8 percent of the variation within the 33 criterion statements. The major thrust, or focus, of the 33 criterion statements can be obtained with the identification of the 9 factors instead of 33. For each factor criterion statement combination a factor loading is determined. These loadings are the correlations between each factor and the criterion statements.

The literature on factor analysis offers no standard for determining which of the factor loadings are contributing significantly to the explanation of variation and which are not. These standards are usually determined by the researchers. A correlation between a criterion statement and a factor of $r > .50$ was considered important for this study, unless there was no correlation in the factor greater than .50, in which case the largest correlation in the factor was used. The factor names were determined by a judgmental evaluation of important variables within each factor. This is the standard procedure where factor analytic techniques are used. Table 1 presents a summary of the criterion statement–factor combinations, a brief statement indicating the nature of the criterion statement, and a statement indicative of the combination of significant criterion statements within each factor. For example, one criterion statement refers to the number of majors in a particular program and another to the number of graduates from the program (Figure 1, Nos. 32 and 33). In Factor 1, there were no other factor criterion statement combinations where the correlation exceeded 0.50. Since both variables refer to the size of the program, Factor 1 was named program size. In similar manner, the important criterion statement/factor combinations were determined and the factor name derived from the most significant criterion statements in that factor.

Analysis of Responses

It is possible with factor analysis to determine, for each respondent, a factor score on each of the factors and then to treat these factor scores as random variables. It is, therefore, possible to perform an analysis of variance, t-test, or correlation analysis, or any other procedure that requires interval-scaled data. This was done and the results follow.

Comparison Between Department Chairpersons and Students on the Nine Factors

Table 2 shows the mean factor scores for the department chairpersons and for the June, 1975, graduates and the ranking of each of these nine factors within the two groups. The coefficient of rank correlation between the two groups is .725, which is sufficient association to reject the null hypothesis of no correlation at the 5 percent level of significance. Based on this test, it can be concluded that the two groups showed consistency in their assessment of the nine factors. However, it is interesting to note the extremes. Program size was the least significant factor among students and the most significant among department chairpersons. Academic standards was the most important factor among students, but least important among faculty. It appears that there was disagreement with the extreme points, but general agreement with the middle factors.

There is a significant difference in the mean factor scores of the two groups for all factors except 2 and 7 using a t-test 5 percent level of significance. The department chairpersons view the factors of program size, supportive nature of the program, and nonteaching work of the faculty as significantly more important than do the graduates. The graduates view the factors of

INSTRUCTIONS AND RESPONSE

PRINT YOUR MAJOR HERE _____
PRINT YOUR COLLEGE HERE _____

CHECK THE SPACE INDICATING THE LEVEL OF THE DEGREE YOU RECEIVED.
ASSO _____ BACH. _____ MAST. _____ SPEC. _____ DOCTORAL _____ PROFESSIONAL (LAW)_____
THE FOLLOWING IS AN EXAMPLE TO HELP EXPLAIN HOW YOUR RESPONSES SHOULD BE MADE.
EXAMPLE:

MAJOR RUSSIAN

IN MY OPINION THE FOLLOWING PROPOSED CRITERIA ARE OF THE INDICATED IMPORTANCE IN EVALUATING THE ACADEMIC PROGRAM NAMED ABOVE:

CRITERION	EXTREME IMPORTANCE	VERY HIGH IMPORTANCE	MODERATE IMPORTANCE	LOW IMPORTANCE	NO IMPORTANCE
(1) The extent to which graduates of the program are able to speak the language effectively.	( )	(X)	( )	( )	( )

BY CHECKING "VERY HIGH IMPORTANCE" THE RESPONDENT HAS INDICATED THAT THE CRITERION, "THE EXTENT TO WHICH GRADUATES OF THE PROGRAM ARE ABLE TO SPEAK THE LANGUAGE EFFECTIVELY", IS OF "VERY HIGH IMPORTANCE" IN EVALUATING THE RUSSIAN LANGUAGE PROGRAM.

NOW - PLEASE MARK THE SPACE WHICH BEST DESCRIBES YOUR OPINION OF HOW IMPORTANT EACH CRITERION IS IN EVALUATING THE MAJOR OR PROGRAM YOU NAMED AT THE TOP OF THIS PAGE. REMEMBER YOU ARE EVALUATING CRITERIA. YOU ARE NOT EVALUATING THE PROGRAM FROM WHICH YOU HAVE JUST GRADUATED.

CRITERION*

(1) The adequacy of the scheduling of courses so that students may complete programs in a reasonable time.
(2) The extent to which the faculty contribute to the public service mission of the program.
(3) The success of graduates of the program in being accepted to high quality graduate schools.
(4) The number of graduates who obtain employment in the field of study at each level of study of the program.
(5) The extent to which the program generates outside funds for research.
(6) The extent to which the program meets standards required by external accrediting, professional, or other appropriate agencies.
(7) Achievement of the program's students on national competitive examinations.
(8) The extent to which the program provides possibilities for developing interdisciplinary efforts in the general field of study.
(9) The extent to which the program is innovative.
(10) The extent to which the program provides for the possibilities of future expansion of the program.
(11) The extent to which information about the program is up-to-date and accurate.
(12) The extent to which the program achieves the stated objectives.
(13) The extent to which the program's faculty is creatively productive in research, writing, performance, consulting and publication.
(14) The extent to which the faculty of the program are recognized as successful teachers.
(15) The extent to which the program has adequate support services in terms of facilities, equipment, technical and clerical personnel.
(16) The extent to which the program provides for in depth study.
(17) The extent to which the program supports other university programs.
(18) The faculty-student ratio in the program.
(19) The extent to which graduates are qualified to offer the variety of services and levels of performance expected of graduates of such a program.
(20) The extent to which the program requirements and expectations are publicly available for examination prior to the entry of students in the program.
(21) The positive benefit-cost relationship of the program.
(22) The number of student credit hours generated by the program.
(23) The extent to which the program serves the community needs of the Northwestern Ohio area and specifically those of Toledo.
(24) An acceptable attrition rate in the program at each level of its instruction.
(25) The extent to which the program has clearly defined objectives.
(26) The extent to which students perceive the faculty of the program as supportive of a student's learning experience in a positive fashion by being readily available for advising and general assistance in a fashion that leads to a high level of satisfaction on the part of the student.
(27) The extent to which the program is successful in attracting students in competition with other similar programs.
(28) The extent to which the program represents a comprehensive survey of the field of study.
(29) The extent to which the program increases the public's awareness of the University.
(30) The extent to which the program encourages high academic standards in its students.
(31) The ability of the program to increase its students' earning power.
(32) The number of majors in the program.
(33) The annual number of graduates at each level of the program.

THE SPACE BELOW IS PROVIDED FOR YOU TO ADD CRITERIA WHICH YOU FEEL ARE NOT DUPLICATED ABOVE.

(34)
(35)
(36)

*To conserve space, only the criterion statements are shown. See the example above for full column.

Figure 1. Criteria for evaluation of academic programs.

Table 1

Summary of Major Variables within Factors for Combined Faculty and Staff

Factor name and number	Variable name and number
1. Program size	32. Number of majors
	33. Number of graduates
2. Understanding program description and objectives	1. Class scheduling
	11. Updated and accurate program information
	12. Achieves stated objectives
	20. Public awareness of program requirements
	25. Clearly defined objectives
3. Academic standards	3. Acceptance into graduate school
	6. Accreditation and professional standards
	7. Achievement of graduates on national exams
4. Cost efficiency	21. Positive cost benefit relationships
	22. Number of student credit hours generated
5. Innovative program	9. Innovative program
6. Employability	4. Graduates able to obtain employment
7. Supportive nature of the program	16. Depth in study
	17. Supportive of other university programs
	28. Survey of knowledge area
8. Public relations	29. Program increases public awareness
	30. Encourage high academic standards
9. Nonteaching work of faculty	13. Research, publication and consulting done by faculty

Table 2

Mean Factor Scores, Factor Ranks and *t* Statistics

Factor	Mean student score	Rank among students	Mean faculty score	Rank among faculty	*t* statistic
1. Program size	0.186	9	-0.374	1	-6.22*
2. Understanding program description and objectives	-0.043	5	0.082	4	1.37
3. Academic standards	-0.231	1	0.443	9	8.47*
4. Cost efficiency	-0.143	2	0.283	7	4.99*
5. Innovative program	-0.095	3	0.184	6	3.03*
6. Employability	-0.091	4	0.177	5	3.38*
7. Supportive nature of program	0.035	6	-0.074	3	-1.39
8. Public relations	0.168	8	0.342	8	-6.98*
9. Nonteaching work of faculty	0.073	7	-0.144	2	-3.02*

*Significant at the 5 percent level.

Table 3

Comparison of Mean
Factor Scores of
Department Chairpersons

Factor		F statistic	College pair comparisons[b]
1.	Program size	2.345	
2.	Understanding program description and objectives	12.367 [a]	(1, 7), (7, 4), (4, 3) (1, 4), (3, 1), (4, 2)
3.	Academic standards	13.330 [a]	(1, 7), (2, 7), (4, 7), (3, 7)
4.	Cost efficiency	14.403 [a]	(7, 1), (4, 1), (7, 3), (4, 3)
5.	Innovative program	1.561	
6.	Employability	3.138 [a]	
7.	Supportive nature of program	6.069 [a]	(1, 7), (1, 2), (3, 7), (3, 2), (4, 7), (4, 2)
8.	Public relations	2.079	
9.	Nonteaching work of faculty	2.594 [a]	

[a] $p < 0.05$ critical value = 2.44

[b] College code:

1 = Arts and sciences
2 = Business administration
3 = Education
4 = Engineering
5 = Law
6 = Pharmacy
7 = UCATC (University Community and Technical College)

academic standards, cost efficiency, innovative programs, employability, and public relations as significantly more important than do the department chairpersons. The mean factor scores for the factors "understanding program description and objectives" and "supportive nature of the program" were not found to differ significantly.

Comparison of the Factor Scores for Each Factor by College for the Department Chairpersons and Students

An analysis of variance (ANOVA) was performed on the factor scores by college for responses of the department chairpersons and the graduates. The results are summmarized in Table 3 for the department chairpersons. The instructional staff at the University of Toledo is assigned to one of seven colleges noted at the bottom of Table 3. There is only one program in the College of Law, and there are only two in the College of Pharmacy. These colleges were excluded from this portion of the analysis due to this very small number of responses. The Scheffe Test for *post hoc* comparisons was used to investigate the difference between pairs of means where a significant F value was found. The Scheffe Test is a powerful procedure for comparing sample means and tends to be conservative in guarding against a Type I error. As an example of the conservative nature of the test, for Factors 6 and 9 of department chairpersons' responses (Table 3) the ANOVA indicated at least one significant difference between a pair of sample means, but the Scheffe Test did not detect where the difference existed. In fact, the difference was still not detectable when the level of significance for the Scheffe Test was increased from 5 to 10 percent.

For the factor "understanding the program description and objectives" the F statistic is significant, indicating that a significant difference in mean factor scores exists between at least one pair of colleges, and the Scheffe Test indicated there were six pairs of significant differences in sample means. The department chairpersons in the University Community and Technical College (UCATC) and those in the College of Education did not weight this factor with as much importance as those in the Colleges of Engineering and Arts and Sciences. It appears that those in the former colleges, who tend to use instructional objectives, rated this factor important, whereas those in the latter two colleges, who do not tend to use objectives as often, rated it as less important. Apparently the College of Business falls somewhere in the middle, not associating with either group.

In Factor 3, academic standards, there is a significant difference between the mean factor scores of UCATC department chairpersons and the department chairpersons of each of the other colleges. This is perhaps a manifestation of the philosophical position of UCATC. The objective of an associate degree program might be conceptualized as seeking to give students

a job-oriented skill or making the student more employable. There is little concern in preparing the student for graduate education, whereas this is a concern to the baccalaureate colleges. The Colleges of Arts and Sciences and the College of Education tended to view the cost efficiency factor, Factor 4, as important, whereas UCATC and the College of Engineering tended to find this factor unimportant. Perhaps this reaction is tied to current enrollment trends. Those colleges with decreasing enrollments tend to have the factor of cost efficiency on their minds more than those not facing enrollment problems.

The examination of the results of the *post hoc* tests on Factor 7 (the supportive nature of the program) tend to support the contention of the cost efficiency discussion. The Colleges of Education and Arts and Sciences do not find this factor important, whereas the College of Engineering and UCATC do find this factor important.

Responses of the graduates were also analyzed by college, comparing the factor scores for each of the nine factors. There were four factors on which at least one significant difference between pairs of means was noted, but the Scheffe Test detected a significant difference (at the 10 percent level) only on Factor 7 (the supportive nature of the program). The factor scores were significantly different for this factor between the College of Arts and Sciences and the College of Pharmacy. This is perhaps due to the educational philosophies involved. Students in arts and sciences may be concerned with developing a broad base of knowledge, intellectual acumen and entering graduate school. Those students in the College of Pharmacy tend to be job oriented.

Comparison of Factor Scores for Each Factor by Level of Program for Graduates and Department Chairpersons

An ANOVA procedure was performed comparing factor scores by the level at which the degree was awarded, i.e., associate, masters, doctoral, and so on. There were no pairs of means where the factor scores differed significantly, using the Scheffe Test, for the students in comparing nine factors. For the department chairpersons, a significant difference between at least a pair of means was obtained on five factors. The Scheffe Test detected a significant difference between pairs of means on four of the factors. Department chairpersons perceived a difference between the associate degree and the baccalaureate, master's and the doctoral degrees for the factor academic standards. Since all of the associate degrees at the University of Toledo are awarded at UCATC, these findings are congruent with earlier results. It was found that associate degree graduates differed significantly from each of the other four degree graduates regarding the factor of cost efficiency. This factor was the most important to those at the associate level.

Factor 7 (supportive nature of the program) was found to differ significantly when the associate and doctoral graduates were compared. Those at the doctoral level found this factor significantly more important than those at the associate level. Factor 9 (nonteaching work of the faculty) was found to differ significantly between the doctoral, education specialist and the other three levels.

Conclusions

The following is a summary of the major conclusions reached in the analysis.

1. Nearly 60 percent of the variability within the 33 criterion statements can be explained by nine factors using a statistical technique called factor analysis. These nine factors are shown in Table 1.

2. There was general consistency in the rankings in terms of importance of the nine factors between graduates and departmental chairpersons, but they did disagree on the most important and least important factors. (The size of the program was the least important factor to graduates and the most important to department chairpersons. Academic standards was the most important factor among students, but the least important among faculty.) There was general agreement between the two groups on the middle ranks, however.

3. The department chairpersons viewed the factors of program size, supportive nature of the program, and the nonteaching work of faculty as significantly more important than did the graduates. The graduates viewed the factors of academic standards, cost efficiency, innovative programs, employability, and public relations as significantly more important than did department chairpersons.

4. The factor, understanding the program description and objectives, was not viewed by department chairpersons in the College of Education and UCATC with as much importance as by those in the Colleges of Arts and Sciences and Engineering.

5. The department chairpersons' responses for Factor 3, academic standards, were found to differ significantly between UCATC and each of the other colleges.

6. The department chairpersons in the Colleges of Arts and Sciences and Education viewed Factor 4, cost efficiency, as significantly more important than those at UCATC and in the College of Engineering.

The warranting of these criteria, and their coalescence into the nine identified categories as the result of the application of factor analysis, makes it possible for us to move ahead with the identification of specific outcomes, or programs, and the selection of appropriate measurements of those outcomes.

We expect this to be done with 10 to 15 programs during the summer of 1976. We will proceed to carry forward a pilot evaluation of 10 to 15 academic programs in the fall of 1976 using criteria developed in this study.

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OUTCOMES OF THE ACADEMIC AND NONACADEMIC COLLEGE EXPERIENCE RELATED TO FREQUENCY OF STUDENTS' INFORMAL INTERACTION WITH FACULTY

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A considerable body of literature in higher education has hypothesized the importance of informal interaction between faculty and students beyond the classroom as a significant factor in the impact of college on student development. (See Chickering, 1969; Clark, 1968; Feldman and Newcomb, 1969.) However, the empirical evidence substantiating a significant effect of student-faculty interaction on the student's college experience or its outcome is far from abundant.

One outcome which has been suggested by the research is increased faculty influence on student career choices and aspirations for graduate education (Greeley, 1962; Grigg, 1966). More recent research by Wilson, Wood and Gaff (1974) and by Wilson et al. (1975) found that students engaging in a high frequency of informal interaction with faculty differed, across a range of student characteristics, from their classmates who seldom engaged in such interactions. High interactors not only had more intellectual, artistic and cultural interests in common with faculty from the beginning, but they also reported having changed more during college than low interactors did. Similarly, high interactors also expressed greater satisfaction with their total college experiences than low interactors.

The purpose of this study was to extend the work of Wilson, Wood and Gaff (1974) and Wilson et al. (1975) by means of a more directly focused investigation of the multidimensional differences in student perception and experience of college which are associated with varied amounts of informal contact with faculty. Specifically, the study sought to determine the extent to which students who frequently engaged in informal interaction with faculty beyond the classroom differed from those who did not in their rating of the academic program and of nonacademic life, and in academic achievement, sources of satisfaction and influence, and attrition rate.

Methodology

Sample. The setting for the study was Syracuse University, a large private university with a total undergraduate enrollment of approximately 10,000 students, located in central New York State. A simple random sample of 500 freshmen was drawn by computer from the population of freshmen enrolled in the College of Arts and Sciences at that institution. The Arts and Sciences population from which the sample was drawn was approximately 54% male and 46% female.

Instrument. As a measure for ratings of their academic programs and their nonacademic lives, students were asked to rate the statements "I have found my academic program at S.U. to be, and I have found my nonacademic life at S.U. to be" on the Adjective Rating Scale (ARS) developed by Kelly and Greco (1975). The ARS consists of twenty-four adjectives against which the respondent rates certain statements using a four point scale: 1= extremely, 2 = very, 3 = somewhat, 4 = not at all. Previous factor analysis of the ARS has yielded a stable underlying structure of five factors. The internal consistency reliability of the scale scores derived from those factors ranged from .71 to .85, while the test-retest reliabilities over a seven-week period ranged from .66 to .98. A validational analysis indicated substantial correlations (r = .58 to .93 in magnitude) among the ARS factors and the evaluation, potency and activity dimensions of the semantic differential (Kelly and Greco, 1975).

Additional items on the instrument asked students to estimate both the number of times during the semester they had met informally with faculty members, outside of class, for ten minutes or more, and the number of organized extracurricular activities in which they had participated during the year. The questionnaire also asked students to indicate expected major, residence arrangement and Clark-Trow subcultural orientation toward college; and to rank-order four possible educational goals, four sources of influence on personal and intellectual growth, and six possible areas of personal satisfaction.

Response. The questionnaire was distributed by mail to the entire sample in late March 1975 (approximately two-thirds of the way through the spring semester). Subsequent to a mailed follow-up, usable responses were obtained from 379 subjects yielding a response rate of 75.8%. The high rate of response, plus a chi-square analysis indicating nonsignificant differences between the sample and the population with respect to sex distribution, suggested the representativeness of the sample.

In order to obtain comparison groups for the study, the distribution of the number of informal interactions with faculty reported by respondents was stratified at the 33rd and 67th percentiles into categories termed "low," "moderate" and "high interactors." One hundred and forty respondents were classified as low interactors, 131 as moderate interactors and 106 as high interactors. (The responses of two respondents could not be categorized and were dropped from the analysis.) The range of informal faculty contact for the three comparison groups were low interactors = 0-1; moderate interactors = 2-4; high interactors = 5-40 with the median number being eight.

Statistical analysis. Although the factor structure of the Adjective Rating Scale was previously developed on a sample of 769 subjects, the stimulus statement to which the subjects responded pertained to specific courses. In the Syracuse University study respondents were asked to rate broader experiences (their academic

programs and their nonacademic lives). It was therefore judged necessary to determine empirically the factor structure which held for this variation in the use of the ARS.

Principal components factor analysis with varimax rotation of components having eigenvalues ≥ 1.0 (Kaiser, 1959) was used to identify the underlying dimensions of students' ARS ratings of their academic programs and their nonacademic lives. A separate analysis was done for each statement. Factor scale scores using variables with rotated loadings $\geq .40$, were computed for each student. The reason for using characteristic loadings rather than a complete estimation method, in which all variables regardless of their factor loadings would have been used, was to increase the internal consistency (alpha) reliability of the individual factor scales (Armor, 1974). These scale scores were then combined with each student's reported participation in extracurricular activities and cumulative freshman grade-point average. (Grade-point average was obtained from the official records of the College of Arts and Sciences.) A preliminary multivariate analysis of variance was conducted on those variables to determine the presence of overall significant differences among group mean vectors. Following this analysis, the variables were employed as predictor variables in a three-group stepwise discriminant analysis to determine which variables best distinguished among the groups identified as low, moderate, and high interactors while controlling for the variable intercorrelations. The criterion for controlling the stepwise selection of variables for inclusion in the analysis was the minimization of Wilk's Lambda. The minimum F-ratio to enter the analysis was set at 1.0.

Results

Factor analysis of students' ARS ratings for their academic programs and their nonacademic lives yielded five and four factors respectively with eigenvalues ≥ 1.0. The composition of these two sets of factors is shown in Table 1. Each factor has been given a tentative name felt representative of the underlying psychological construct tapped. The reader is cautioned, however, against attributing surplus meaning to the factors beyond the scales which characterize them.

Table 1 also shows the alpha or internal consistency reliability coefficients computed for each set of factor scales. As shown in Table 1, scales for Factor V, uniqueness, had a computed alpha reliability of only .27. This dimension was therefore not included in further analysis. Similarly, Factor IV, unnamed in Table 1, was not included in further analysis because it was judged to be uninterpretable within the context of the statement rated.

Table 2 displays the means, standard deviations and univariate F-ratios for the nine predictor variables. The multivariate analysis of variance F-ratio for the difference among group mean vectors was 1.72 with 18 and 732 degrees of freedom ($p<.05$). Significant univariate F-ratios were found on the interest value and practical appeal factors for students' ARS ratings of both their academic programs and their nonacademic lives. Because of the intercorrelations among the nine variables, however, the univariate tests of significance are not independent and therefore the probability statements associated with them are difficult to interpret. Since the discriminant analysis controls for the degree of association among the variables, the information it provides is more meaningful.

Table 2 also shows the results of the stepwise discriminant analysis. As indicated, six variables entered the analysis with an F-ratio to enter ≥ 1.0. Of the two possible discriminant functions (one less than the number of groups), only the first was statistically significant at $p<.05$ and will be discussed further. The first discriminant function had a canonical correlation of .23 with group membership and yielded an approximate chi-square value of 19.51 with 7 degrees of freedom ($p<.01$). Inspection of the standardized discriminant function weights for the first function shown in Table 2 indicates that students' ratings of their academic programs on the interest value and practical appeal factors and their ratings of their nonacademic lives on interest value best discriminated among the three groups. The number of extracurricular activities participated in and ratings of the academic program on dullness/apathy contributed somewhat less to the discrimination, and cumulative freshman grade-point average contributed the least of all six variables.

As further shown in Table 2, high and moderate interactors tended to be characterized by more positive mean ratings of the academic program on interest value and practical appeal and by more positive mean ratings of their nonacademic lives on interest value than were low interactors. Recall that the ARS is scored 1 = extremely, 2 = very, 3 = somewhat, 4 = not at all. Thus, lower scores on these three factors indicate more positive ratings.

While the centroid value for the moderate interactors on the discriminating variables (.111) placed them between the high (.235) and low interactors (-.282), their clear tendency was to cluster with the former rather than with the latter. This tendency is indicated by the multivariate F-ratios for the observed differences between the individual pairs of group centroids (degrees of freedom for each comparison = 6 and 369). The respective centroid differences between the low and moderate interactors ($F=2.29$, $p<.05$) and between the low and high interactors ($F=2.91$, $p<.01$) were both statistically significant. However, the difference in centroids between the moderate and high interactor groups was not ($F=1.14$, $p>.05$).

Although the six variables in the discriminant function significantly discriminate the three comparison groups, the modest canonical correlation (.23) between the predictor variables and group membership suggests that there is also considerable overlap. This is further indicated by a classification analysis using the pooled covariance matrix and individual discriminant scores. Approximately 42% of the 377 subjects were correctly classified as low, moderate and high interactors. Since one could expect 33.3% correct classification by chance, the classification based on the discriminant analysis represented a 26% improvement over chance.

Additional analysis. Additional analysis indicated insignificant differences between the low, moderate and high interactors on (a) the group distributions of respondents by sex, expected major, and Clark-Trow subcultural orientation toward college, (b) the rank-ordering of four educational goals, and (c) the means of available quantitative and verbal scores on the Scholastic Aptitude Test. (In the latter analysis, SAT scores were available for 97 of the low interactors, 94 of the

Table 1

Varimax Rotated Factor Loadings for Students' Adjective Rating Scale Responses
(N=379)

I have found my academic program at S.U. to be . . .		I have found my nonacademic life at S.U. to be . . .	
Factor	Loading	Factor	Loading
Interest Value		*Interest Value*	
Enjoyable	.78	Exciting	.84
Exciting	.76	Enjoyable	.81
Stimulating	.74	Good	.78
Enlightening	.71	Interesting	.72
Interesting	.67	Stimulating	.71
Rewarding	.66	Rewarding	.71
Good	.62	Enlightening	.67
Provocative	.58	Boring	.63
Informative	.54	Worthwhile	.61
Alpha reliability = .90		Dull	.60
% Variance = 23.1%		Valuable	.59
Dullness apathy		Provocative	.57
Irrelevant	.75	Alpha reliability = .94	
Dull	.71	% Variance = 27.7%	
Boring	.66	*Practical Appeal*	
Useless	.65	Irrelevant	-.72
A Waste	.62	Useless	-.71
Alpha Reliability = .85		A Waste	-.70
% Variance = 14.1%		Relevant	.63
Practical appeal		Practical	.54
Necessary	.74	Informative	.54
Practical	.60	Necessary	.49
Valuable	58	Alpha Reliability = .84	
Worthwhile	.51	% Variance = 17.7%	
Relevant	.44	*Demand/Challenge*	
Alpha reliability = .82		Demanding	.78
% Variance = 11.0%		Challenging	.75
Difficulty/Challenge		Difficult	.74
Demanding	.86	Different	.42
Difficult	.85	Alpha reliability = .69	
Challenging	.69	% Variance = 9.6%	
Alpha reliability = .[illegible]		*Unnamed*	
% Variance = 9.3%		General	.70
Uniqueness		% Variance = 5.5%	
General	-.70		
Different	.55		
Alpha reliability = .27			
% Variance = 4.7%			
Total variance explained = 62.2%		Total variance explained = 60.5%	

Note: The complete factor matrix and related information are available upon request from E.T. Pascarella and P.T. Terenzini, Syracuse University.

Table 2

Means, Standard Deviations, Univariate *F*-Ratios and Standardized Discriminant Weights For Nine Predictor Variables[a]

Step	Variable	Low Interactors (N=140) Mean	SD	Moderate Interactors (N=131) Mean	SD	High Interactors (N=106) Mean	SD	*F*-ratio[b]	Standardized discriminant weight[c]
	Variables in the analysis (*F* to Enter > 1.0)								
1	Interest value (academic program)	2.71	.51	2.58	.49	2.47	.59	6.71**	-.41
2	Interest value (nonacademic life)	2.24	.60	2.04	.64	2.06	.57	4.58*	-.46
3	Number of extracurricular activities	1.56	1.80	3.54	11.90	2.63	5.31	2.30	.25
4	Dullness/apathy (academic program)	3.30	.57	3.40	.45	3.41	.46	2.25	-.27
5	Cumulative freshman grade-point average	2.48	.73	2.48	.67	2.62	.72	1.62	.15
6	Practical appeal (academic program)	2.57	.55	2.41	.53	2.35	.60	5.54**	-.47
	Variables not in the analysis (*F* to enter < 1.0)								
	Practical appeal (nonacademic life)	1.92	.54	1.80	.54	1.76	.46	3.41*	
	Difficulty challenge (academic program)	2.53	.56	2.45	.63	2.36	.64	2.54	
	Demand/challenge (nonacademic life)	2.89	.61	2.88	.56	2.79	.64	1.28	

[a] Multivariate *F* for the 9 predictor variables = 1.72 with 18 and 732 degrees of freedom ($p < .05$)
[b] Univariate degrees of freedom = 2 and 374
[c] Centroid for high interactors = .235; Centroid for moderate interactors = .111; Centroid for low interactors = -.282
*$p < .05$
**$p < .01$

moderate interactors and 76 of the high interactors.) Moreover, a series of post hoc multivariate analyses of pre-enrollment scores on the Activities Index (Stern, 1970), a 12-dimension measure of personality needs, and the College Characteristics Index (Stern, 1970), an 11-dimension measure of the college environment, indicated insignificant overall diferences between the mean vectors of the three comparison groups. Preenrollment scores on the Activities Index and the College Characteristics Index were available for 92 low interactors, 78 moderate interactors and 72 high interactors.

Significant differences between low, moderate and high interactors were indicated in three areas: (a) their rank ordering of interaction with faculty as a source of personal satisfaction during the freshman year (mean ranking for high interactors = 3.72, mean ranking for moderate interactors = 4.22, mean ranking for low interactors = 4.66, Kruskal-Wallace chi-square = 30.95 with 2 degrees of freedom, $p<.001$); (b) their rank ordering of faculty as a source of positive influence on their intellectual development (mean ranking for high interactors = 2.40, mean ranking for moderate interactors = 2.76, mean ranking for low interactors, = 2.85, Kruskal-Wallace chi-square = 18.22 with 2 degrees of freedom, $p<.001$); and (c) their rank ordering of faculty as a positive influence on their personal development (mean ranking for high interactors = 3.04, mean ranking for moderate interactors = 3.38, mean ranking for low interactors = 3.45, Kruskal-Wallace chi-square = 14.31 with 2 degrees of freedom, $p<.001$). The largest differences in mean rankings in all three areas were between high and low interactors with moderate interactors generally falling between the two extreme groups.

Follow-up analysis. The subjects initially participating in the study were followed during the 1975 fall semester to determine if differences in rate of attrition were associated with membership in the low, moderate or high interactor groups. A subject was considered a leaver if he or she did not register for the 1975 fall semester (i.e., his or her sophomore year). Sixty-six students fell into that category, six of whom were not allowed to reregister because of low academic performance. These six subjects were dropped from the analysis and the final comparison was made between "voluntary leavers" and "persisters". Table 3 shows the distribution of voluntary leavers and persisters among the low, moderate and high interactors. The chi-square value for the test of independence was significant at $p<.001$. The percentage of voluntary leavers among low interactors was more than twice as high as the percentage among moderate interactors and more than three times as high as the percentage among high interactors.

Conclusions

While no causal claim can be made, the results of this investigation support the hypothesis of a positive relationship between the amount of informal interaction freshman students have with faculty members and their perceptions of both their academic and nonacademic college experiences. High and moderate interactor groups in the study were best differentiated from low interactors on the basis of their more positive ratings of the academic program on interest value and practical appeal factors and their more positive ratings of their nonacademic lives on the interest value dimension.

The fact that high and moderate interactors were characterized by more positive perceptions of both their academic programs and nonacademic lives on interest value than were low interactors suggests than informal faculty-student contacts beyond the classroom may be an important factor in enhancing—and perhaps integrating—the impact of the academic and nonacademic experiences of college during the critical freshman year.

Moreover, high interacting freshmen also tended to rank faculty higher than did low interactors as a source of positive influence on their intellectual and personal development and to rank interaction with faculty members higher than low interactors as a source of personal satisfaction. These findings suggest that extraclassroom

Table 3

Distribution of Persisters and Voluntary Leavers Among Low, Moderate and High Interactors Groups

Group	Low interactors	Moderate interactors	High interactors	Totals
Persisters	102 (73.9%)	113 (87.6%)	96 (92.3%)	311
Voluntary leavers	36 (26.1%)	16 (12.4%)	8 (7.7%)	60
Totals	138	129	104	371

Chi-square value = 16.86 with 2 degrees of freedom ($p<.001$)

contact with faculty members may serve to amplify the positive effects faculty have on students through their more direct, instruction-related contact. The results suggest, further, that the salutary consequences of students' informal contact with faculty are multidimensional—there appear to be both cognitive and affective outcomes. It would appear that the conception of the faculty member as a role model for students has both conceptual validity and educational usefulness for those institutions whose educational goals are more broadly conceived than simply the inculcation of knowledge or career preparation.

Perhaps equally important, the field of influence which appears to be associated with informal faculty contact is not narrowly restricted to any particular subgroup of freshman students. No statistically significant differences among the three groups of subjects are indicated with respect to sex, expected major course of study, or level of academic aptitude (as measured by SAT scores), nor are there observable, significant differences among the groups with respect to their orientations toward college (as indicated by the Clark-Trow subcultural types), their educational goals, their personality needs or their preenrollment expectations of college. This evidence suggests not only that frequent informal contact with faculty members has measurable, positive effects on freshmen, but also that the benefits may accrue to a wide range of individuals. Furthermore, it may also suggest that individual student characteristics are a less important determinant of the frequency with which freshmen seek interaction with faculty beyond the classroom than are the characteristics and personal orientations of the particular faculty members to whom they are exposed early in their academic careers. As suggested by Wilson, et al. (1975), faculty who enjoy and actively seek interaction with students outside of class may give clear cues as to their accessibility for such interaction through their in-class teaching styles and attitudes.

Support for the positive insitutional outcomes of informal student-faculty interaction is suggested by the significant association found between amount of informal contact with faculty and students' persistence at the institution from freshman to sophomore year. It might be hypothesized that students who are able to establish satisfying informal relationships with their teachers develop a higher level of integration into the institution's social and academic systems than their classmates who fail to establish such relationships (Tinto, 1975). Thus, the former may have stronger personal commitments to the institution than the latter and, consequently, be more likely to persist, even though they may not be achieving at a significantly higher level academically.

Given the ex post facto nature of this research, however, a degree of caution should be exercised in attributing causality to informal interaction in the results of the study. Indeed, several alternative explanations for the findings may be advanced.

Many students who engage in an extensive amount of informal contact with faculty beyond the classroom may do so in large measure because, initially, they are more positively disposed to the content of their formal, in-class academic experience than are low interactors. Being more intellectually and personally stimulated by what transpires in their formal academic programs, they may be more likely to seek interaction with faculty members outside of class as a means of further enhancing the personal satisfaction of stimulation they derive in the classroom. In this sense, informal interaction with faculty might act to accentuate existing positive attitudes toward the academic program.

Another alternative explanation is the possibility that the comparisons groups do, in fact, differ significantly in personality structure. The findings of this study do not support such an explanation. Nevertheless, it may be that low and high interactors differ along personality dimensions related to their propensity to seek interaction with faculty, dimensions which are largely untapped by the activities index or the Clark-Trow model. Such an hypothesis, however, seems more appropriate to explaining why students may choose to interact with faculty, rather than to elucidating the outcomes associated with that contact.

Quite apart from the issue of which hypothesis is the most persuasive, however, the evidence of this study has several clear implications for institutions of higher education. The positive influence of students' informal contact with faculty members supports the efforts of those institutions seeking to provide occasions for students and faculty members to interact outside the classroom. Not only may the consequences of that contact be generally quite positive, the influence which faculty members apparently exert on students through such contact may have both cognitive and affective results. Moreover, that influence is apparently felt by students from a wide range of academic aptitudes, educational goals, and orientations toward college. More frequent contact between students and faculty members appears likely not only to induce more positive attitudes toward an institution in general but, also, to result in positive personal and educational gains by the students exposed to such contact.

Furthermore, students who, by virtue of their personality make-up or other factors, are drawn to faculty members and enjoy that contact may be frustrated or disenchanted with an institution if that contact is denied or obstructed, whether by the personal inclinations of faculty members or because of a faculty reward system which does not recognize the educational value of faculty contact with students outside the classroom.

Much of this is speculative, and the caveat concerning causal attributions based on the findings of this research has been stated. What is less arguable, however, is the observed, progressively more positive association between the amount of informal contact students have with faculty members and their attitudes toward both their academic programs and nonacademic lives, and their tendency to persist at the institution.

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THE PROGRAM PRODUCTIVITY RATIO: TOWARD A BETTER MEASURE OF ACADEMIC DEGREE PROGRAM EFFICIENCY

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Among the highly visible conflicting pressures in postsecondary education is that between the desire of individual institutions to maintain their existing academic degree programs and the demand of the public (as frequently articulated through a central state postsecondary education agency) that less efficient, underenrolled, or duplicative academic degree programs be terminated. Through such action, initiation of new courses of study can be effected at little or no net increase in cost. The pressure to review currently existing academic degree programs can be expected to grow steadily in the future as full-time-equivalent (FTE) student enrollment declines while inflation forces costs per student higher.

Most public postsecondary education institutions have reluctantly accepted the forfeiture of a measure of institutional autonomy in requesting or receiving public funds through a state agency vested with the authority to coordinate or control postsecondary education planning and budgeting within a state. However, it is important to recognize that this acceptance is primarily by administrators and is acceptance of an institutional-level loss of autonomy.

The power to control academic degree program offerings at constituent institutions is also utilized by central agencies to plan for postsecondary education on a state-wide basis. This type of control ranges from approval of new academic degree program requests to review and termination of existing degree programs. The academic degree program control mechanism, unlike generalized budgeting measures, affects a specific and limited segment of each institution; impacts directly upon faculty members who may perceive it as a direct threat to their personal job security; and deals in the academic functioning of the institution.

While few would deny the public's right to maximum return on its investment in postsecondary education, the exercise of degree program control, particularly the review of existing degree programs, can bring about one of the most bitter types of conflict possible within postsecondary education—between the institution, as supported or forced by its faculty, and the central state agency. Under these circumstances, the best that can be reasonably expected is acceptance of the objectivity of the decision-making process and the data utilized by those institutions and individuals affected.

Current Academic Degree Program Measures

The measurement or quantitative description of academic degree programs is currently in a rudimentary stage of development. A formula commonly used in measuring efficiency or cost benefit is

$$\frac{\text{Volume of output}}{\text{Resources consumed}} = \text{Efficiency}$$

When applied to academic degree programs, this formula can be expressed in this way:

$$\frac{\text{Students served by degree programs}}{\text{Resources consumed by degree programs}} = \text{Degree program efficiency}$$

Unfortunately, the simplicity of this efficiency formula, when applied to academic degree programs, is confounded by currently incomplete measures of its components.

Measurement of academic degree program outputs, or students served, is at best rudimentary. Simple tabulations of degree program graduates fail to take into consideration (a) students currently enrolled in programs, (b) those students who leave academic degree programs with increased knowledge and marketable skills prior to completing the program, and (c) the range of ability possessed by degree program completers. Output measures which purport to assess the quality of persons completing academic degree programs are just beginning to be introduced.

Measures of the resources consumed by an institution in supporting individual academic degree programs, while varying substantially, are better defined. Byers and Bower (1975) identify at least three methods for calculating program graduate costs (p. 7). The National Center for Higher Education Management Systems (NCHEMS) Information Exchange Procedures (IEP) approach to the issue identifies direct and full institutional costs and allocates these costs to the academic degree programs as program unit costs.

The problems inherent in measuring academic degree program efficiency will certainly be resolved only over a protracted period of time, and this paper makes no contribution to the issue of the quality or effectiveness of such programs. Introduced in the paper is the concept of measuring academic degree program efficiency in terms of the amount of service provided to students per FTE faculty position consumed in support of an individual program. Introduction of this concept, while not resolving the questions, does provide a further step in developing better measures of academic program efficiency. The actual and potential uses of this concept, the program productivity ratio, are next described.

Uses of the Program Productivity Ratio

The program productivity ratio has been utilized in decision making at an institution that will be identified as State College. The institution was involved in an academic program review directed by the state postsecondary education agency. State College's initial charge was identification of 20 percent of its academic degree programs for further

study directed toward possible termination. All postsecondary institutions under the agency's control were asked to utilize cost, output, institutional priority, and quality as variables in their identification of the programs for further review.

State College had participated in the Information Exchange Procedures field-test and possessed more sophisticated program data than any other institution in the state or than the central state postsecondary education agency. In addition to the standard IEP data set, the program productivity ratio was available to the vice president for academic affairs.

The program productivity ratio was integrated into the IEP data set and utilized by the vice president for academic affairs in identifying 7 of the institution's 34 academic degree programs for further review and possible termination. The vice president reacted to the availability and utilization of the data by indicating that internally the data had been extremely useful in (a) objectively determining the particular degree programs whose operations were least efficient and (b) convincing the particular portion of the faculty adversely affected that the necessary decisions had been reached in the most objective manner possible.

In terms of programmatic data, State College was in an advantageous position in its relationship with the central, state postsecondary education agency. State College was able to justify its recommendations and provide evidence in defense of its other academic degree programs. The vice president maintained that the data saved at least one other degree program from termination.

The potential uses of the program productivity ratio on a statewide level are numerous. In an academic program review, the program productivity ratio calculation provides a ready comparison of (a) the number of FTE faculty members supporting each academic degree program at each institution, (b) the efficiency of relatively similar degree programs at different institutions, and (c) various types of degree programs with state staffing/funding ratios for faculty positions.

Computation of the Program Productivity Ratio

The program productivity ratio concept and computation resulted from an institutional field-test of the NCHEMS Costing and Data Management System and Information Exchange Procedures. Once institutional data were processed through various modules, stored in the data management module, and the standard Information Exchange Procedures were completed, the author and a senior staff associate from NCHEMS began "brainstorming" concerning other potential uses and the computational capabilities of the data management module. The program productivity ratio calculation was among those potential uses identified and subsequently executed. Hence, the program productivity ratio computation orginated first and was followed by realization of the potential usesfulness of the resulting information.

Manual computation of the program productivity ratio occurred only after it had been data processed; however, it is useful for the purpose of explaining, in greater detail, the calculations that take place within the Costing and Data Management System. The following sequence and the accompanying illustration (Figure 1) outline the steps and formulae utilized in the manual computation of the program productivity ratio.

Step 1. Calculation of total student credit hours (SCH) produced by discipline. Determine the number of SCH produced in each course (course enrollment x course credit value = SCH) and aggregate the data in accordance with the institution's academic discipline structure.

Step 2. Determination of total FTE faculty assigned to each discipline. Several methods for allocating faculty across disciplines exist. Among the philosophical and practical issues involved are (a) Should the allocation be based upon what the faculty member is assigned to do or the activities which he or she reports performing? (b) Can an individual faculty member, based upon his or her teaching in excess of a given amount, be considered greater than 1.00 FTE faculty? (c) How should independent studies and laboratories be considered in allocation of FTE faculty? While each of these issues can be resolved in various ways, the recommendation of NCHEMS and the manner indicated in calculation of the program productivity ratio is to allocate FTE faculty based upon what they are assigned to do and the weekly contact hours associated with respective tasks. Figure 2 illustrates a faculty member assigned completely to instruction. In this example, .36 faculty would be allocated to the political science discipline and .64 FTE faculty to the history discipline.

Step 3. Calculation of portion of FTE faculty per SCH by discipline. Utilizing the data resulting from the initial two steps, the total SCH produced by discipline are divided into the total FTE faculty assigned to each discipline resulting in the FTE Faculty per SCH by discipline. (An example of this calculation is contained in Figure 1.)

Step 4. Identification of SCH inducement by academic degree program into each discipline. The concept of students in each academic degree program inducing (causing) SCH into multiple disciplines is basic to degree program efficiency studies. The concept, known as an induced workload matrix, is amply explained in several publications of NCHEMS (Johnson and Huff, 1975) and is illustrated in Figure 1, where students in the psychology degree program caused (induced) 498 SCH to be distributed across the disciplines.

Step 5. Computation of the discipline FTE faculty consumed by each degree program. Multiplying the results derived from step 3 (FTE faculty per SCH by discipline) by the results of step 4 (SCH inducement by academic degree program into each discipline), an allocation of the FTE faculty in each discipline is achieved. (Figure 1 provides an example of one degree programs' consumption of FTE faculty from various disciplines.)

Step 6. Calculation of the program productivity ratio. The final step in the calculation of the program productivity ratio is to divide the total discipline FTE faculty consumed by each degree program into the total SCH consumed by students in that academic degree program. (Step 6 is illustrated in Figure 1.)

The manual computation of the program productivity ratio, as well as most other program measures, is not feasible at institutions of any size or complexity, but is useful primarily in understanding the data-processed calculations that are explained next.

Each of the steps outlined above is accomplished

Step 1	Step 2	Step 3	Step 4	Step 5
	Disciplinary data		Psychology degree program data	
College discipline	Total student credit hours (SCH) produced by discipline	Total full-time-equivalent (FTE) faculty assigned to discipline	Portion of full-time-equivalent (FTE) faculty student credit hour (SCH) by discipline*	Student credit hours (SCH) induced by psychology degree program**	Portion of discipline full-time-equivalent (FTE), faculty consumed by psychology degree program***
Art discipline	1106	3.63	.0033	18	.0594
English discipline	1550	9.70	.0063	101	.6363
Mathematics discipline	1686	5.98	.0035	74	.2590
Biology discipline	1550	5.00	.0032	41	.1312
History discipline	1593	5.17	.0032	24	.0769
Psychology discipline	777	1.80	.0023	240	.5520
				Total 498	1.7148

* Computed: $\frac{\text{Total FTE faculty assigned to each discipline}}{\text{Total SCH Produced by discipline}}$ or $\frac{3.63 \text{ FTE}}{1106 \text{ SCH}} = .0033$

** Source: Instructional work load matrix

*** Computed: Portion of FTE faculty per SCH by discipline X SCH inducement by academic degree program into each discipline or .0033 x 18 = .0594

**** Computed: $\frac{\text{Total SCH induced by degree program}}{\text{Total FTE faculty consumed by degree program}}$ or $\frac{498}{1.7148} = 290$

Psychology degree program productivity ratio = 290 SCH Per FTE faculty ****

Step 6

Figure 1. Example program productivity ratio manual computation.

PROGRAM PRODUCTIVITY RATIO

Discipline and course number	Average weekly contact hours	Full-time equivalent faculty member allocation
History 101	3	.27
History 102	3	.27
Political science 233	4	.36
History 339*	1	.10
	11	1.00

*Independent study

Figure 2. Example of faculty member assigned completely to instruction (1.00).

using the NCHEMS Costing and Data Management System; however, several of the steps are accomplished in a different order. (Figure 3 and the following comments explain the calculation.)

The student data module is utilized to simultaneously accomplish the calculation of total SCH produced by discipline (Step 1) and the SCH inducement by academic degree program into each discipline. (Step 4). Though the calculation for Steps 1 and 4 take place within the student data module, the results of these steps (along with the academic degree program and disciplinary structure) are communicated by passing a series of update records from the student data module to the data management module.

Personnel data module determines the total FTE faculty assigned to each discipline (Step 2). Task records containing data concerning assigned classes or tasks that the faculty perform are the primary source of information for the module. The results of calculations of the personnel data module (total FTE faculty assigned to each discipline) are communicated, using another series of update records, to the data management module for storage.

The data management module is the most essential component in the Costing and Data Management System and the program productivity ratio calculation. The purposes of the data management module are to serve as a file or storage structure for information calculated in all the modules, and as a tool for performing arithmetic computations on the data contained within its file structures.

In its utilization to calculate the program productivity ratio, the data management module first receives data on update records from the student data module (Step 1). These update records contain instructions for establishing the activity center structure of data management module and one of the parameters associated with the activity center. Specifically, the data management module receives the discipline structure of the college as its activity center structure and total SCH produced by discipline as its first parameter. (See Figure 3.) In Step 4, the SCH inducement by academic degree program into each discipline is also communicated to the data management module from the student data module. As shown in Figure 3, these data are added to the already existing activity/discipline structure as an additional parameter.

The data management module receives from the personnel data module, in Step 2, the total FTE faculty assigned to each discipline. This is stored as yet another parameter associated with each discipline.

With the data stored as a result of the calculation in Step 1 (SCH produced by discipline) and Step 2 (FTE faculty assigned to each discipline), the data management module is directed to divide the "SCH per discipline" parameter into the "FTE faculty assigned by discipline" parameter in each activity center (Step 3) and to store the results in each activity center/discipline as a new parameter identified as FTE faculty per SCH. The same type of calculation and storage command is given to the data management module in the execution of Step 5, the discipline FTE faculty consumed by each degree program.

In Step 6 (computation of the program productivity ratio), the data management module is directed to (a) total down degree program/parameter columns derived from Step 4 (SCH inducement by academic degree program into each discipline) and Step 5 (discipline FTE faculty consumed by each degree program), (b) divide the total SCH taken by students in each degree program by the total FTE faculty consumed by the same degree program, and (c) store the resulting program productivity ratios as parameters in a new activity structure element identified as program measures.

The program productivity ratio's calculation appears on the surface to represent a formidable task, and, indeed, it is not something which should be undertaken without consideration of the cost implications. However, once the institutional commitment is made to study academic degree programs, the program productivity ratio represents the least burdensome measure of academic degree program efficiency currently available.

Evaluation of the Program Productivity Ratio as a Measure of Academic Degree Program Efficiency

The program productivity ratio certainly is not the final solution in measuring academic program

(Activity structure)	(Parameters)						
	Step 1	Step 2	Step 3	Step 4 Student credit hours (SCH) induced by***		Step 5 Full-time-equivalent (FTE) faculty consumed by*	
Disciplines	Total student credit hours (SCH) per discipline***	Total full-time-equivalent (FTE) faculty assigned**	Full-time-equivalent (FTE) faculty per student credit hour (SCH)	Psychology degree program	Other degree programs	Psychology degree program	Other degree programs
Art	1106	3.63	.0033	18	++++	.0594	++++
English	1550	9.70	.0063	101	++++	.6363	++++
Mathematics	1686	5.98	.0035	74	++++	.2590	++++
Biology	1550	5.00	.0032	41	++++	.1312	++++
History	1593	5.17	.0032	24	++++	.0769	++++
Psychology	777	1.80	.0023	240	++++	.5520	++++
+		+	+	+	++++	+	++++
+		+	+	+	++++	+	++++
+		+	+	+	++++	+	++++
+		+	+	+	++++	+	++++
+		+	+	+	++++	+	++++
Program measures				498*		1.7148*	

* Calculated within data management module
** Communicated from personnel data module
*** Communicated from student data module

Figure 3. Example program productivity ratio data-processed computation in data management module.

efficiency. Its principal limitations include a total lack of sensitivity to the qualitative aspect of evaluating academic degree programs and the need for data processing the bulk of data required for its computation. Though these limitations are substantial, they are shared with all other current measures of degree program efficiency.

The relative advantages of the program productivity ratio compared to other current measures of academic degree program efficiency, include the following.

1. *Relative ease of computation.* The program productivity ratio calculation does not involve use of institutional fiscal data nor require the crossover of the institutional general ledger chart of accounts. Only implementation of the student data module, personnel data module, and data management module are required.

2. *Lack of sensitivity to inordinately high or low discipline salaries, rank structures, or tenure rates.* Due to its computation based upon FTE faculty (as opposed to salaries that are affected by the above variables) differences in efficiency measures attributable to the personal characteristics of individual faculty members are eliminated. These personal characteristics and attendant fiscal implications are often beyond current institutional control, and their inclusion in considerations of efficiency in decision making can result in substantial distortion of the resulting data.

3. *Direct comparability with central postsecondary education agency staffing/funding ratios.* While few state agencies have moved to academic degree program budgeting, many do utilize staffing/funding ratios in budgeting. The program productivity ratio provides a data element through which academic degree programs are directly comparable to the basis upon which many institutions are allocated funds and FTE faculty positions.

4. *Comparability of results over a period of time without influence by inflation.* Due to its nonfiscal derivation, the program productivity ratio allows direct comparison over a number of years of degree program efficiency without adjustment for inflation.

Conclusion

As indicated in this paper, the program productivity ratio does not represent a final measure of academic degree program efficiency nor a replacement for other measures. Rather, it does represent a currently available alternative technique in the long-term development toward a better measure of academic degree program efficiency.

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OUTCOMES OF VOCATIONAL-TECHNICAL-TRANSFER PROGRAMS AT COMMUNITY COLLEGES, TECHNICAL SCHOOLS, AND SIMILAR TYPES OF INSTITUTION

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Postprogram follow-up studies have traditionally been an integral component of educational research. Recently, however, follow-up activities have received special emphasis due to the concerns of accountability brought to public attention through economic and cultural factors.

The purpose of this study was to assess the outcomes of postsecondary vocational-technical-transfer programs by examining the educational and vocational status of students five years after enrollment. Specific questions to be answered were as follows:

1. What is the present educational-vocational status of individuals who began vocational-technical-transfer programs at community colleges, technical schools, and similar types of institutions in the fall of 1970?
2. How do students' final programs relate to their occupational experiences and to their future occupational plans?
3. Do those individuals working in program-related occupations feel that their postsecondary training made a difference in the level of their present employment?
4. Are those individuals working in program-related occupations satisfied with their present jobs, and would they go through their respective programs again?

Methodology

Sample. A follow-up sample (N=4,350) representing the national norm was selected from among students (N = 22,342) who completed the American College Testing Program's Career Planning Program (CPP) in the fall of 1970. The CPP is a guidance assessment instrument designed to help students make better-informed career decisions and plans. Major components of the CPP include ability, interest, and experience scales as well as sections on job choice, educational plans, job values, and working condition preferences.

Students in the norm group completed the CPP as they began vocational, technical and transfer programs at 110 community colleges, technical schools, and similar kinds of institutions across the nation. Follow-up sample members were chosen according to the educational programs in which they were originally enrolled. Eight programs were selected. Both males and females were selected from the business and marketing, accounting, science, social science, and arts and humanities programs. Males only were selected from electrical engineering technology and auto mechanics, and females only from nursing programs. Very few members of the opposite sex were originally enrolled in these programs.

The survey instrument. The survey instrument was designed to cover individual's educational-vocational decisions, experiences and plans. The instrument was pretested extensively with different samples representing two-year college students. Follow-up items included employment history since leaving the program, future employment plans, particular and overall indices of job satisfaction, perceptions of the necessity of postsecondary training for present job, and educational history. "Would you do it over again?" was also asked.

Follow-up procedures and response rate. Survey mailings to individuals, mailings to parents, and phone calls to nonrespondents were conducted from late January 1975 to early June 1975. Mailings were also made to institutions for address updating when necessary. Survey packages included a cover letter, the survey instrument, and a return business reply envelope. The first survey package mailing was followed 17 days later by a postcard reminder. A second survey package was mailed three and one-half weeks after the postcard reminder; a third survey package was sent four weeks after that. By early May, when all mailing procedures had been completed, phone calls were made to all nonrespondents. Many apparently had moved and were not listed in phone directories at their last known addresses.

The four mailings produced a total response rate of 45%, or 72% of those for whom accurate addresses were available. Phone calls added 15% to the overall response rate (increasing by 23% the rate of those that could be reached). Thus, a final response rate of 60% (N = 2,594 from 109 institutions) was achieved, equivalent to returns from 95% of those with accurate addresses.

Analyses. For each of the four questions related to the overall purpose of this study, cross-tabulation procedures were performed between individuals in the particular group studied and the criterion measure (present occupation, job satisfaction, etc.). Prior to the cross tabulations, all individuals were screened for complete data, that is, that they had responded to all items pertinent to a particular analysis.

Results

Present educational-vocational status. Sample members are listed in Table 1 by completed and noncompleted programs as related to current occupation. (The classification system shown in Table 3 was used to categorize similar current occupations.) The comparisons below include all 982 persons completing programs and the 507 persons not completing programs who were employed at the time the sample was taken.

Study results revealed that most persons who had completed programs and were employed held jobs for which they had been trained. Most of those from business and marketing programs, including those who had not completed them, held business contact jobs (50%). In addition, 23% of those completing the programs held business detail jobs. All persons completing registered nursing programs held nursing positions. Most

Table 1

Students From Completed and Noncompleted Programs (CP and NCP respectively) by Current Occupation

Current occupational group	Educational program															
	Business and marketing		Registered nursing		Accounting		Electrical engineering technology		Science		Auto mechanics		Social science		Arts and humanities	
	CP	NCP	CP	NCP	CP	NCP	CP	NCP	CP	NCP	CP	NCP	CP	NCP	CP	NCP
Business contact	50	50	0	17	14	22	9	14	9	19	7	12	13	16	13	18
Nursing	0	0	100	37	0	0	0	0	0	0	0	0	0	1	0	2
Business detail	23	13	0	20	72	38	3	9	2	11	5	2	11	31	17	33
Technologies	0	8	0	0	2	6	62	39	57	18	3	8	2	2	7	13
Science	0	0	0	6	0	0	0	2	11	2	0	0	2	2	0	4
Trades	12	23	0	17	9	28	22	32	19	44	79	78	7	19	18	16
Social sciences	15	6	0	3	3	6	3	4	2	6	2	0	64	28	29	7
Arts and humanities	0	0	0	0	0	0	1	0	0	0	1	0	1	1	16	7
Total percent	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
	(N=104)	(N=48)	(N=206)	(N=30)	(N=133)	(N=72)	(N=154)	(N=44)	(N=91)	(N=99)	(N=136)	(N=40)	(N=113)	(N=81)	(N=45)	(N=93)

Note. There were 1,489 persons completing or not completing programs and 234 persons continuing programs. Not included in the analyses discussed in the article are 97 individuals in the military, 124 homemakers, 140 who were seeking jobs, 80 who indicated that there were no jobs available in their fields, and 97 who were unemployed for other reasons. The remainder of respondents not accounted for in this table did not complete sufficient items to be included in the analyses for this study.

Table 2

Percentages for Students from Educational Programs by Their First Jobs (FJ), Current Jobs (CJ) and Expected Future Jobs (EJ)

Program completed	Occupational group: Business contact			Business detail			Nursing			Technologies		
	FJ	CJ	EJ	FJ	CJ	EJ	FJ	CJ	EJ	FJ	CJ	EJ
Business and marketing	54	51	60	24	27	13	1	1	1	4	0	1
Registered nursing	1	0	0	0	0	0	99	100	99	0	0	0
Accounting	11	14	22	72	72	64	1	1	1	2	0	1
Electrical engineering technology	6	9	12	4	2	3	0	0	0	63	61	68
Science	8	9	13	4	3	2	1	0	0	57	60	64
Auto mechanics	3	8	17	8	9	6	0	0	0	1	3	5
Social sciences	17	14	11	17	8	3	4	0	0	4	1	0
Arts and humanities	12	14	16	17	18	2	3	0	3	12	5	10
	(N=125)	(N=144)	(N=131)	(N=170)	(N=200)	(N=167)	(N=216)	(N=238)	(N=219)	(N=191)	(N=216)	(N=205)

Program completed	Occupational group: Trades			Science			Social sciences			Arts and humanities		
	FJ	CJ	EJ	FJ	CJ	EJ	FJ	CJ	EJ	FJ	CJ	EJ
Business and marketing	12	9	5	0	0	0	5	12	19	0	0	1
Registered nursing	0	0	0	0	0	0	0	0	0	0	0	1
Accounting	12	10	7	1	0	0	1	3	5	0	0	0
Electrical engineering technology	27	25	12	0	0	1	0	1	3	0	1	1
Science	24	19	7	5	9	11	1	0	3	0	0	0
Auto mechanics	87	80	64	0	0	0	1	0	7	0	0	1
Social sciences	5	3	2	0	1	1	53	71	83	1	2	1
Arts and humanities	19	11	2	0	0	3	22	36	36	15	16	28
	(N=167)	(N=179)	(N=164)	(N=149)	(N=178)	(N=171)	(N=165)	(N=199)	(N=203)	(N=99)	(N=133)	(N=125)

Note. Percentages are based on students who completed or spent at least four months in a training program.

of those finishing accounting programs held business detail jobs (72%); a second group was employed in business contact. Of those completing studies in electrical engineering technology, 62% held technological jobs, while 22% were in trades. Greater percentages of those from science programs had positions in technology and trades than in science. A large majority of those persons completing programs in auto mechanics held trade jobs (79%), and 78% of those not completing the programs were similarly employed. The majority of those finishing social science programs held positions in that field (64%). Finally, those who had completed arts and humanities programs were spread among the different categories, almost half (45%) holding either arts and humanities or social science jobs.

Of the 2,594 members of the sample, 234 were not employed and were still enrolled in educational programs. The current educational programs (both 2-year and 4-year) of those persons continuing programs not previously completed were similar to those in which they had started in 1970. For example, more than half of those persons originally enrolled in business and marketing programs were continuing in either 2- or 4-year business programs. Similarly, a majority of those persons who had been in accounting programs were still enrolled in that program area; over two-thirds of those who were originally in registered nursing were continuing in nursing programs. More than half of the persons previously enrolled in electrical engineering technology programs were still enrolled in that type of program, but only about 20% of those initially in science were still in such programs, another 25% having switched to engineering. Two-thirds of those who had been enrolled in social science programs were still in those types of programs. About 30% of those persons who began arts and humanities programs were continuing in arts and humanities, but another 30% had changed to social science.

First, current, and planned future jobs. The data in Table 2 illustrate the movement toward program-related employment of working individuals who have completed educational programs and have spent at least four months in a program before leaving school Hence, they differ slightly from those reported in Table 1.

The data demonstrate the stability of the more vocationally specific programs. For nearly every such program area, percentages of students who obtained their first jobs in a program-related occupational group were almost identical to those percentages of students still employed in that group. For example, 72% of the students from accounting programs obtained their first jobs in the business detail occupational group; the same percentage were employed in that group at the time of the survey.

For students who completed some of the more general programs, however, larger percentages were currently employed in program-related occupations than when they obtained their first jobs. For example, over 70% of the students who had completed a program in the social sciences were currently employed in that area in contrast to only 53% who had first obtained social science positions. A similar pattern was evident for the arts and humanities programs. There is a marked trend for those who have completed general programs like social science or arts and humanities to eventually obtain program-related jobs. Many of those students evidently did not have the immediate opportunity to enter the job market in a program-related occupation. However, in 1975, three years after entry, a higher percentage were employed in program-related jobs and an even higher percentage expected to hold such jobs three years into the future. There appears to be a tendency for persons from the more specific educational programs to move in the direction of higher paying jobs and, what some consider, higher status jobs that indeed utilize more of their training. For example, students in electrical engineering technology tended to move out of the trades area and into the technology area; business and marketing students moved out of business detail into business contact occupational areas.

Several interesting trends in job mobility from first to anticipated future job are also shown in Table 2. Most noticeable is the dramatic drop from 80% for students in auto mechanics who were employed in trades jobs at the time of the survey to 64% for those who expected to hold future jobs in that area. The data suggest that many of those people expected future employment in the business contact field. (Note the increase from 3% for the auto mechanics students who obtained their first jobs in business contact to 17% for those who expected to obtain a future job in that area.) Except for nursing and social science students, there was a slight trend for people to move out of a specific training area toward business contact. This movement probably represents those people who want to manage or own a business of their own.

Attitudes toward postsecondary education. Students who completed a program or who spent at least four months in one before leaving school and who were employed in program-related occupations formed the criterion groups used in this analysis. The occupational groups and related educational programs are shown in Table 3.

More than 75% of the individuals who were employed in program-related occupations agreed that they could not have obtained their present jobs without education beyond high school. People from only two of the programs (auto mechanics and business and marketing) had mixed feelings—one-half were positive and one-half were negative—about whether they needed postsecondary training to obtain their respective jobs. However, for all other programs, a substantial majority felt that their training beyond high school had been necessary. The registered nursing, social science, electrical engineering technology, and science programs had high ratios (35:1, 9:1, 5:1, and 5:1 respectively) of individuals who felt that their training had been necessary, to those who felt otherwise.

Satisfaction and willingness to do it over. The same criterion groupings that were established in the preceding section were also employed here. (See Table 3.) The satisfaction index is based on a four-response item which asked how satisfied an individual was overall with current job. The responses were: very satisfied, fairly satisfied, fairly dissatisfied, and very dissatisfied. The item which covers the second part of this topic asked, "If you could do it over again, would you still enter a post-high school vocational, technical, or transfer program?" The possible responses were "yes," "no," and "I'm not sure."

The data indicate that for all eight programs the overwhelming majority of students employed in pro-

Table 3

Occupational Groups and Educational Programs Used in Classifying Students' Educational and Employment Status

Occupational group (and related job families)	Related educational program
1. *Business contact:* promotion and direct contact sales; management and planning; retail sales and services	Business and marketing
2. *Nursing:* nursing and human care	Registered nursing
3. *Business detail:* paying, receiving, and bookkeeping; clerical and secretarial work; office machine operation; dispatch and delivery	Accounting
4. *Technologies:* engineering and other applied technologies; engineering; repairing and servicing home and office equipment	Electrical engineering technology
5. *Science:* natural sciences and mathematics; medicine and medical technologies	Science
6. *Trades:* machine operating, servicing & repairing; construction and maintenance; transport equipment operation; growing and caring for plants/animals	Auto mechanics
7. *Social sciences:* social sciences and legal services; education and social services; law enforcement and protective services	Social sciences
8. *Arts and humanities:* creative arts; applied arts (verbal); applied arts (visual); popular entertainment	Arts and humanities

Note. This table presents a classification for the eight occupational groups according to the Occupational Classification System and shows how they directly parallel and relate to the eight vocational-technical-transfer programs included in this study.

gram-related occupations were generally satisfied with them. For example, 93% of those in business and marketing, 98% in registered nursing, 94% in accounting, 92% in electrical engineering technology, 97% in science, 94% in auto mechanics, 95% in social science, and 95% in arts and humanities expressed satisfaction with their current occupations. In addition, slightly more than 75% of the groups expressing satisfaction indicated that they would go through their training programs again. Furthermore, those who were satisfied, but "not sure" as to whether they would go through their training again clearly outweighed those who were satisfied but would definitely not do it over again. Interestingly enough, among the small number of persons who were dissatisfied with their current employment, most would still go through their training programs again.

Conclusions

This study has examined outcomes of certain types of postsecondary educational opportunities by offering several responses to the overall question, "What happens to students who attend vocational-technical-transfer programs at community colleges, technical schools, and similar types of institutions?"

A major finding is that a fairly high percentage (about 75%) of those students who were employed at the time of the survey and who had completed educational programs were employed in occupations related to their training. Many of those students who had not completed a program were also employed in occupations related to their programs. In addition, those individuals who were still in school were generally in educational areas related to the programs they began in 1970.

A second trend evident from these data is that students generally tended to gravitate toward jobs related to the educational programs they had completed, although their first jobs might not have been program-related. For most programs, when the survey was taken more students held program-related jobs than had held such positions when first employed. An even larger percentage expected future employment that was related to the educational program they had completed. Local labor market conditions may not have provided the opportunity for immediate entry into a program-related job, but many of those people persisted and subsequently obtained, or planned to obtain, jobs related to their educational programs. One might speculate that students who have invested greater amounts of time and money in completing a program persist longer in seeking related employment. Thus, a side benefit of two-year vocational-technical-transfer programs may be increased job motivation, at least at the entry level.

The third important finding in this study concerns the perceived value of those educational programs by the student "consumer." With the exception of persons from programs in business and marketing and auto mechanics, the vast majority of individuals employed in program-related occupations felt they could not have obtained their present jobs without education beyond high school. Overall, students employed in program-related occupations thought that their community colleges and vocational-technical schools provided valuable training experiences. The fact that a majority of graduates from two programs did not see their educational programs as necessary to obtain their current jobs may reflect the nature of the job skills or degree of responsibility assigned to entry level people in those areas. In some cases, for example, a graduate from a program in auto mechanics might work with older workers and receive the same pay even though the older worker has received no formal training.

Finally, the data from this study suggest that those employed in occupations related to their educational programs are highly satisfied with their present occupations, and the majority of them indicate that they would enter those programs again. Even students who were not satisfied with their current jobs would still go through their particular training programs again. Unfortunately, comparative job satisfaction data for students who did not enter or complete a two-year educational program are not available. But for the individuals in this study their educational programs had sufficient value for them to say they would do it again.

HIGHER EDUCATION GOALS OF FACULTY AND STATE REPRESENTATIVES

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This study reports the differences between the higher education goals of college faculty and those of state-level decision makers. It also reports the perceptions of these two groups about who makes the important decisions regarding higher education at the state level. As a way to focus the problems involved, I have looked specifically at three propositions. The first proposition is that state representatives will value program diversity for higher education more highly than do college faculty. (College faculty will value liberal arts goals instead.) The second proposition is that faculty involvement in campus decision making will be more important to college faculty than to state representatives. The third proposition is that college faculty will perceive themselves to be less influential at the state level than they are perceived to be by state representatives.

The current relationship between institutions and the government is an ambivalent one. Institutional representatives want to protect the autonomy of the college and university. The traditional desire is to maximize internal direction of the institution and ensure freedom from outside control. Colleges want and need the full funding available from government sources.

In reality, however, the ability of higher education institutions to maintain internal control is circumscribed by the state. One means of state influence is substantial manual control. Public institutions have clearly lost any unique control over their own financial fates, and state regulatory agencies are paying much closer attention to institutional budgets as the budgetary crunch worsens. The proportion of state budgets going to higher education in the next twenty years will be no greater than it is now (Glenny and Dalglish, 1973). The federal government is expected to follow a strategy of funding students rather than institutions, but the level funding will not increase significantly. The result will be additional competititon for new students and public funds, which will increase pressure on state decision-making bodies to mediate between institutions. Private colleges and universities are beginning to come under the scrutiny of state agencies as well, grudgingly giving up internal freedom in order to receive, from government sources, funds necessary to support current programs.

Another second form of state involvement is seen in the state's control of the legal context of decision making. At one time or another, decisions have been made at the state level about the number, location, and enrollment of public institutions, program charges to students; admission standards; and quality of instruction in programs. All of these state-level decisions reduce the autonomy of institutions. The erosion of institutional autonomy takes place even though state-level decision makers are wary about becoming too deeply involved in operational questions. The result of the relationships is an uneasy balance between the levels of decision making. Spurlock (1975) claims that "the trend toward statewide coordination of colleges and universities is an escalating struggle for power and values between state officials and instructional leaders" (p. 190).

While states have taken on more responsibility for higher education, faculty have remained mute on the issues. Logan Wilson (1968) mused the following:

> Considering the tendency of many academicians to resist the centralization of authority and to criticize relentlessly the actions of institutional trustees and administrators, it is indeed astonishing how silent they have been about this drastic reorganization" (p. 134).

As the relationships between institution and state become more formalized, differences between the parties will be more clearly perceived. Martin Trow (1974) believes that the two groups do not share the same values and unspoken assumptions regarding the nature and direction of higher education. He believes that the state is more likely to assert its egalitarian concept of the public interest in postsecondary education than are the senior professors in their elite universities, who are increasingly perceived as having special interests. In much the same vein, Waldo (1970) claims that "as the university becomes increasingly an instrument of government there will be severe problems arising from lack of congruence between academic norms and ideology and our general governmental-political norms and ideology" (p. 106).

This study is an investigation of these possible differences. It examines the differences between goals for education of college faculty and legislators and their perceptions on who makes important decisions about higher education at the state level.

Experimental Population

The faculty are members of the American Association of University Professors (AAUP) who have been active in state-level posts for that organization. They over-represent universities and private colleges and under-represent community colleges and public colleges. They were picked because the organization is one of the major groups involved in representing faculty at the state level.

The legislators are active on educational committees in one of the legislative houses. There are a few respondents who work in the governor's office or on state coordinating committees but are included in the group labeled legislators.

Data Collection and Analysis

The following tables and analysis are based on questionnaires returned by 112 faculty members and 85 state representatives. The sampling design called for 125 responses from each group. Ninety percent of the

faculty and 68 percent of the state representatives returned the questionnaire. Efforts to complete the sample are continuing.

There are 41 items in the goals section of the questionnaire. (Data pertaining to these sets of responses are summarized in this paper. The complete list of the 41 goals items and their rankings are available on request from the author.) Each respondent was asked to answer each item in two ways: to what extent a goal is actually being realized in higher education in the state and to what extent it should be emphasized. The response categories were as follows:

5–of absolutely top importance
4–of great importance
3–of medium importance
2–of little importance
1–of no importance

A sixth category was also available: I don't know or can't say.

The second part of the questionnaire requested respondents to assign importance to 14 groups or individuals in terms of how much influence they had on decisions at the state level. The response categories were as follows:

5–a great deal of say
4–quite a bit of say
3–some say
2–very little say
1–no say at all

In the last set of 15 items, respondents were asked to identify groups or individuals that influenced state legislators. The response categories were as follows:

3–a major effect
2–a moderate effect
1–little effect

The mean response score for each item was derived by (1) assigning weights to the response categories, (2) adding together the weights from individual responses, and (3) averaging this total. This procedure was followed for each subgroup of participants, state legislators and university faculty. Separate rankings of the items were then constructed for each subgroup, and the difference or spread on individual items was calculated. A significant difference was declared when the difference was equal to or greater than at least one-third of the possible difference.

Results

We examined the results in four ways. The first, and perhaps most important, was to compare the goals statements of faculty and legislators in terms of "should be" results. It was felt that differences at this point would indicate that the two groups disagreed on goals. Significant differences between legislators and faculty for five of the 41 goal items are shown in Table 1.

The two items ranked higher by faculty than by legislators (items 1 and 38) both reflect a clear desire for faculty involvement in decision making.

The two items ranked higher by legislators (items 4 and 27) both point to a desire on the part of legislators to broaden the base of higher education.

The remaining item (no. 41) is hard to interpret. It may be seen as part of a set which also includes "protect academic freedom" and "student's right to advocate direct action." Legislators and faculty agreed on both of the latter, assigning them high and low priorities respectively.

Next we looked at the ranking of the same 41 items to determine the perception of faculty and legislators as to what "is". The fact that the two groups agreed on 36 of the 41 items leads to the conclusion that there is more agreement than disagreement between faculty and legislators. But differences on some items indicated that the two groups did not share a completely common perception about what is happening in higher education in their state. Again, there are five items which show significant differences. These are reported in Table 2. The most glaring difference between the two groups is identified in item 1. That was the only item that appeared on both Table 1 and Table 2. Rankings on the two tables indicate that legislators think that faculty have more influence than they should. Faculty did not shift the ranking significantly from the "should be" to the "is" category.

There were two items in the "is" list that legislators ranked higher than faculty (items 1 and 19). The first suggests that faculty are much less convinced of their influence than legislators are. The faculty ranking changed from 28.5 on the "is" category to 21 on the "should be" response. The other item indicates that legislators are much more concerned with quality across institutions. This result lends support to the legislative goal, shown on the should be goals, of maintaining a

Table 1

Differences on Item Ranks
Between Faculty and Legislators for "Should Be" Items

No.	Item	Faculty rank	Legislator rank	Difference
1	Let the will of full-time faculty prevail	21	38	-17
4	Provide courses for part-time students	23.5	9.5	14
27	Maintain a balanced level of quality in all the state's institutions	40	18	22
38	Involve faculty in college governance	3	32	-29
41	Protect student's right of inquiry	5.5	20	-14.5

Table 2

Differences Between Faculty and Legislators on Item Ranks for "Is" Items

No.	Item	Faculty rank	Legislator rank	Difference
1	Let the will of full-time faculty prevail	28.5	14	14.5
13	Affect student with great ideas	13	27	-14
16	Orient colleges to needs of the immediate geographic regions	14.5	33.5	-19
19	Maintain top quality in all institutions	23	2.5	20.5
22	Keep costs down through statewide coordination	10.5	29.5	-19

balanced level in state institutions.

The other three items present a mixed picture. Faculty, in contrast to legislators, clearly feel that statewide coordination has been an efficient cost cutter. Faculty also feel that they are meeting the needs of local communities better than legislators believe to be the case. Finally, faculty feel that they are teaching great ideas, while legislators are not as certain.

The following tables draw comparisons between the two groups in a different manner. Each table represents the difference between what the group defines as the current status and that which it believes should be. These tables give evidence that, in relation to an ideal, a goal is either being underemphasized or overemphasized.

Table 3 lists nine items that faculty reported as receiving too much emphasis. Taking these items together, it is clear that faculty would like to downgrade the importance of the practical outcomes of education for students. According to faculty, preparation for leadership, careers and graduate work are all overemphasized. An analysis of the remainder of the items indicates that faculty desire to put less emphasis on a range of rather practical operational necessities such as student activities, institutional prestige, applied research, community needs, faculty careers and economy of operation.

Results from the same questionnaire drawn up for legislators is shown in Table 4, which contains five items also found on the faculty list and four others. Two of the four new items (no's 38 and 1) reflect the previously noted disagreement on institutional governance. The remaining two goals not shared with faculty (items 21 and 33) may indicate an impatience among legislators with institutional roles other than those directed toward practical student outcomes.

A similar comparison can be made of goals receiving too little attention in current practice. Faculty results are reported in Table 5. Faculty concern over the prestige and prerogatives of their profession is reflected in items 23, 28, and 38. The remaining seven might be broadly described as expressing concern for those academic atmospheres and traditional liberal arts values that are not intrinsic to course content or direct student outcomes. This fits easily with results from Table 3 concerning the overemphasis of immediate practical outcomes.

Table 3

Faculty Report of Goals Receiving Too Much Emphasis

No.	Item	Is rank	Should be rank	Difference
2	Prepare and encourage students for graduate work	7	36	-29
11	Give faculty maximum opportunity to pursue careers	17	32	-15
16	Orient colleges to the needs of the immediate geographic regions	14.5	30	-15.5
20	Prepare students for leadership	6	37	-31
22	Keep costs down through statewide coordination	10.5	25	-14.5
32	Prepare students for careers	2	31	-29
34	Carry on applied research	5	26	-21
39	Provide a full range of student activities	12	39	-27
40	Increase the prestige of colleges	3.5	27	-23.5

Table 4

Legislators' Report of Goals Receiving Too Much Emphasis

No.	Item	Is rank	Should be rank	Difference
1	Let the will of full-time faculty prevail	14	38	-24
2	Prepare and encourage students for graduate work	10	40	-30
11	Give faculty maximum opportunity to pursue careers	4	39	-35
20	Prepare students for leadership	15	30	-15
21	Carry on pure research	8.5	33	-24.5
33	Provide cultural leadership for the community	11	27	-16
38	Involve faculty in college governance	17.5	32	-14.5
39	Provide a full range of student activities	12.5	36	-23.5
40	Increase the prestige of colleges	2.5	26	-23.5

Finally, Table 6 displays goals reported by legislators to be receiving too little attention. The legislators do not emphasize student outcomes as much as faculty do, although two of the items (nos. 7 and 29) do reflect their concern with the issue. These two are also cited by faculty as receiving too little attention. In addition, legislators agree with faculty about the potential importance of suiting rewards to contributions. Again, however, we see in the remaining 4 items the legislative preference for broadening the constituent base and moderating quality against cost.

Conclusion About Goals

Tables 1 through 6 provide some insight into the different views that faculty and legislators have of the functioning of higher education as well as the sets of college goals they favor. Any conclusions should be tempered by the fact that there is more agreement reported between the two groups than difference. In general, faculty believe that colleges are overemphasizing the practical outcomes for students and are doing this at the expense of the more general liberal arts goals. Faculty also feel that colleges should not be preparing students for jobs, social leadership, and graduate schools, but rather should be preparing them to lead examined lives that require training in moral and intellectual areas.

The legislators, on the other hand, feel that altogether too much emphasis is put on faculty involvement in governance. Additionally, they are interested in seeing colleges serve a larger constituency in diverse ways, with less emphasis on purely academic aims.

The results support the propositions stated at the beginning of this paper. The first proposition was that state representatives will value program diversity for higher education more highly than will college faculty, who will value liberal arts goals instead. The second proposition declared that faculty are more concerned about their own involvement in campus decision making than are legislators. The third proposition was that faculty perceive themselves to be less influential at the state level than they are perceived to be by state representatives. This third hypothesis is addressed in the next section.

Who Makes the State Decisions

The second section of the questionnaire concentrated on identifying the decision makers. Faculty

Table 5

Faculty Report of Goals Receiving Too Little Attention

No.	Item	Is rank	Should be rank	Difference
6	Cultivate student's intellect	18.5	2	16.5
7	Develop student's character	40	13.5	26.5
19	Maintain top quality in all institutions	23	8.5	14.5
23	Make sure rewards reflect the contribution to the college	37	18	19
25	Produce well-rounded student	28.5	11	17.5
28	Make sure colleges are run democratically	36	13.5	22.5
29	Prepare students for citizenship	34	12	22
31	Assist students to develop objectivity	28.5	8.5	20
38	Involve faculty in college governance	22	3	19
41	Protect student's right of inquiry	20	5.5	14.5

Table 6

Legislators' Report of Goals Receiving Too Little Attention

No.	Item	Is rank	Should be rank	Difference
4	Provide courses for part-time students	33.5	9.5	24
7	Develop student's character	37	5.5	31.5
22	Keep costs down through statewide coordination	29.5	14	15.5
23	Make sure rewards reflect the contribution to the college	35	9.5	25.5
26	Assist citizens through extension services	36	16	20
27	Maintain a balanced level of quality in all the state's institutions	32	18	14
29	Prepare students for citizenship	38.5	7	31.5

and legislators were requested to rank a list of 14 individuals or groups who might be involved in decision making. Table 7 contains these rankings.

These results indicate that there is considerable agreement between the perceptions of faculty and legislators about who makes the decisions at the state level. Only one item approached significance: Faculty rated state agencies as having more influence than did legislators.

The final table (no. 8) reports the rankings by faculty and legislators of the influence of groups or individuals on legislators.

Again, it is clear that none of the items meet the original test of significance. There was only one item that approached a difference of five ranks—the rating of faculty groups. Faculty rated themselves as less influential than did state legislators. Even though it is not significant, it is in the predicted direction.

Although there were no significantly different ratings in either of these rankings, there is some evidence that faculty perceive state agencies as being more influential than do legislators.

Conclusion

Based on a sample of 112 AAUP members and 85 state legislators and state administrators, there appears to be more agreement than disagreement on their perception of the current state of college and university operations. The same general conclusion holds true for the goals that the two groups have for the future of higher education.

There are differences, however. The most consistent difference appears to be on the importance of faculty involvement in institutional governance. Legislators do not think it as important as faculty does.

Legislators are more concerned about serving a broader population through extension courses and classes for part-time students. Meeting the needs of the local community is given a higher rank by legislators than by faculty.

Table 7

Faculty and State Legislator Rankings of Higher Education Decision Makers at the State Level

Item	Faculty rank	Legislator rank	Difference
Trustees of colleges	2	1	1
Legislators	3	3	-
Sources of large endowments	9	10	-1
Federal agencies	6	6	-
State agencies	4	8.5	-4.5
Campus presidents	1	2	-1
Other campus administrators	5	5	-
Faculty	10	8.5	1.5
Students	11	13	-2
Parents of students	14	14	-
Citizens	13	12	1
Alumni	12	11	1
Accrediting agencies	7	4	3
State coordinating agencies	8	7	1

Table 8

Faculty and Legislator Rankings of the Influence of Groups or Individuals on Legislators

Item	Faculty rank	Legislator rank	Difference
Alumni	7	8	-1
Governor	1	1	-
Local government	10	11	-1
State government	2	4	-2
Federal government	3	6	-3
Faculty groups	9	5	4
College administrators	4	3	1
Students	12	12	-
Citizens groups	8	9	-1
State coordinating agencies	6	7	-1
College trustees	5	2	3
Accrediting bodies	11	10	1
Donors to the colleges	13	15	-2
Foundations	14	14	-
Churches	15	13	2

There is some evidence that the two groups differ in the importance given to the traditional liberal arts goals. Faculty report more concern than legislators with helping students realize goals that are not deemed to be immediately useful for jobs.

Most striking in the area of agreement between the two groups is their mutual concern for protecting academic freedom. In addition, they both agree that more attention should be given to the moral development and citizenship skills of students and that less emphasis should be put on preparation for graduate school and student activities on campus. They also agree that the least important goal of higher education is serving only the ablest high school students.

In a pluralistic system there should be a diversity of goals for higher education. It is neither good nor bad to have agreement or disagreement among groups. Difficulty can arise if the goals and perceptions of current affairs are so widely divergent that no agreement is possible. This reasearch does not indicate that such extreme differences exist. The only items pointing in that direction are the ones that show faculty desire for involvement in governance and legislator desire to downgrade the goal. This might become a central issue in faculty unionization agreements.

The general purpose of this work is to help identify the areas of agreement and disagreement between two decision-making groups who are, and will continue to be, deeply involved in determining the future of higher education. To the extent that the biases and preferences of these groups can be identified, perhaps misunderstandings can be avoided and the issues of mutual concern can be highlighted.

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SYSTEMWIDE LANGUAGE SKILLS EXAMINATION: A LOOK AT THE UNDERLYING FACTORS

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The trend toward universal availability of higher education has increased public focus upon the question of the basic competency in English language skills of contemporary college students. Higher education systems in California, Michigan, North Carolina, and Illinois are reported to be undertaking assessment of the language skills of their students.

The University System of Georgia in 1972 developed an evaluation procedure to assess the success of academic programs and to provide the needed information for decision making about program development and improvement. The lack of an adequate and suitable testing instrument prompted the development of such an instrument for the university system. A board of regents' policy adopted in 1972 decreed that this examination be instituted. It is a goal of the regents "that students obtaining a degree . . . possess the basic competence of academic literacy, that is, certain minimum skills of reading and writing" (p. 174B). The objectives of the regents' testing program are the following:

> "1. To provide systemwide information on the status of student competence in the areas of reading and writing; and
>
> "2. To provide a uniform means of identifying those students who fail to attain minimum levels of competence expected of graduates in the areas of reading or writing." (p. 174B)

Since the establishment of the program, 75,735 examinations have been administered (as of spring 1975) to students in the University System of Georgia which comprises 32 institutions ranging from small junior colleges to large universities.

This paper describes the instrument and grading procedure, reviews the related literature, examines the relationship between the student background characteristics–college variables and performance on the examination–explores predictability of student performance, and presents the implications for higher education.

Regents' Test and Grading Procedure

Officially, the regents' test is administered to all students during the first quarter of enrollment after they have completed 45 credit hours. The test is divided into two parts, reading and essay. The reading part consists of a vocabulary portion which tests word usage and a reading comprehension portion. The essay part requires a student to write an essay on one of two topics given. Both parts of the test must be passed at the same administration.

The reading section of the test is scored, based on the normative data from the original group tested. To pass, students must score higher than the tenth percentile. Teachers of English in the University System of Georgia score the essay on a criterion basis following a holistic procedure. Raters judge the essay on predetermined criteria of writing ability: (a) organization (limiting the subject, evidence of a thesis, unity, logical development, coherence, and evidence of the development of the thesis); (b) rhetoric (diction, sentence structure, and point of view); and (c) mechanics (spelling, punctuation, and usage). The rating scheme is a 4-point scale indicating essay quality: 1 (substandard); 2 (weak); 3 (good); and 4 (superior). Both the identity of the student and his or her institution are unknown to the rater. Each essay is scored independently by three faculty members. A score of "1" or "not acceptable" must have been assigned to the essay by at least two of the three raters.

Review of Related Literature

The so-called deprived student, or the low-achieving student, has been widely studied in recent years. The problem of low achievers in an open-door college environment was explored by Roueche and Hurlburt (1968), Holstrom (1973), and Schoenfeldt, Bayer, and Brown (1970). The rise of community junior colleges in Georgia has tended to accelerate the number of transfer students. The Committee on Transfer of Credit (1969) of the University System of Georgia dealt with transfer problems and developed a core curriculum to facilitate transfers. It should be noted that regents' policy does not make passing the test a condition for transfer. Some relevant studies on the performance of transfer students compared with native students include Hills (1965), Panos and Astin (1968), Walker, (1969), Buckley (1970), and Melnick, Lichtenstein, and Schubert (1970).

Since the implementation of the regents' test, experimental and research activities have dealt with many aspects of the test. Much of this research has been concerned with the essay, since it largely accounts for failure on the total examination. Wells (1973) examined how well essay performance could be predicted using reading and writing objective tests and two different prediction models. Ravan (1973) made a validity check of the procedure used to evaluate the essay and found that, while the scores from the analytic evaluation were somewhat lower than those from the holistic evaluation, the results established the same four ranks of essay quality. Thompson and Rentz (cited in French, 1974) addressed the question of reliability of each rater using an accuracy percentage, defined as the percent of essays on which at least one other rater agreed with the score assigned. They found that during six administrations of the regents' test there was a perfect rater agreement in 30.9 percent of the cases, partial agreement in 60.2 percent of the cases, and total disagreement in 8.9 percent of the cases. The work of French (1974) reported that "a small but statistically significant degree of relation-

ship was found between biographical factors and essay score, and between subgroup membership and essay score" (p. 24). However, she concluded that "it is not possible to identify, with any degree of certainty, subgroups of students who would be likely to experience difficulty with writing at the college level" (p. 24).

Litaker (1974) investigated item bias in the regents' reading comprehensive testing instrument for homogeneous groups of institutions and concluded that "based on average item difficulty, the LSE (regents' test) was differentially difficult for the four groups of institutions studied. The universities, the senior colleges, the junior colleges, and, then, the black colleges found the test progressively more difficult" (p. 83).

Case Studies

This section of the paper presents the findings of two studies, one conducted in 1972 by Hickman and the other in 1975 by Prather and Smith. Both of these efforts sought to measure relationships between the regents' test and exogenous and endogenous factors. Exogenous factors include such variables as academic and family background, race, sex, and cognitive skills, while endogenous factors include those acquired in the student's higher education experience.

The 1972 student population was a university, two senior colleges and two junior colleges. The college variables included HSA, SAT-V, SAT-M, GPA and grades in core curriculum courses; the biographical variables consisted of sex, race, age, marital status, transfer status, and educational background of parents. The principal factors influencing student performance were sex and minority status, indicating that females and non-minorities perform better on the test after it has been controlled for the ability level of the study population. Surprisingly, grades in English composition were not found to be correlated to performance on the test. It was concluded that school type was not a factor in performance on the regents' test.

In 1975 a follow-up study was undertaken, with the population limited to the university. Although a number of procedural and policy changes had transpired during the intervening years, a comparison in Table 1 shows very little difference between the two studies.

Analysis Procedure

The least square analysis of the test scores was performed in the 1975 study using a stepwise procedure which is a mathematical algorithm ranking the regressors according to how much of the variance in the regressand is accounted for when controlling for the other variables previously entered into the analysis. This technique was used to locate those variables which had the strongest empirical association with the regressand. To aid in interpreting the regression analysis, the regression coefficient is given along with its standard error. The standardized regression coefficient (β) is included so that relative impact of that regressor can be readily noted. The simple bivariate correlation between each regressor and the regressand is also supplied. One data problem encountered in the original report (1975) was the large amount of missing data for certain key variables such as SAT's, GPA's, and so forth. To permit inclusion of these variables, the mean value was substituted for missing values. A reanalysis of the data was performed incorporating a procedure recommended by Cohen (1968). This method allows for an objective measure of the impact of the missing data.

The data base was a weighted sample of those taking the test during the fall 1974 and winter 1975 quarters. It represented the total of those students who failed, or who had previously failed and were repeating the test, and a 34 percent sample of those who passed the first time. The unweighted sample N was 1,011, while the total population equalled 1,910. (The slight variation from the study population number and those shown on the subsequent tables for the weighted N are due to

Table 1

Comparative Data on Regents' Test
1972 and 1975

Variables	Essay			Reading		
	1972 study		1975 study	1972 study		1975 study
	Total sample	University sub-sample	University	Total sample	University sub-sample	University
Female	.15	.18	.12	.03	.13	.03
Non-minority	.15	.11	.17	.48	.32	.42
Veteran	-.09	-.06	-.03	.05	.04	-.01
Native student	.04	.03	.03	.15	.01	.005
HS GPA	.23	.18	.11	.21	.17	.09
SAT–verbal	.37	.32	.29	.75	.70	.59
SAT–math	.21	.17	.24	.57	.39	.37
English composition GPA	.20	.30	.13	.21	.39	.17
Freshman GPA	.21	.20	.23	.28	.42	.27
Cumulative GPA	.26	.26	.30	.34	.44	.47

Table 2

Regression Analysis of Regent's Test
Component: Reading Score

Regressors	Regressor estimators	Standard error of estimators	β	Simple *r*
SAT-verbal	.045	.002	.407	.586
GPA-university	3.247	.262	.254	.468
Non-minority	5.903	.703	.235	.421
Entered higher education after 1971	-.590	.452	-.031	-.094
Other english indicator	.308	.125	.046	.210
English major	3.764	1.066	.060	.139
Business major	-.722	.476	-.035	-.111
English composition after 1971-other	-2.344	.501	-.111	-.130
Mother's education	.602	.297	.038	.142
English composition after 1971-university	-1.522	.482	-.076	-.003
English composition GPA	.590	.163	.079	.165
Para-medical major	-1.749	.597	-.059	.002
Science major	-.527	.165	-.071	.168
Freshman GPA	.713	.237	.073	.272
Education major	-1.073	.567	-.037	-.092
Senior college transfer	1.070	.767	.046	-.113
Business indicator	-.247	.125	-.038	-.019
Missing data: year graduated high school	3.163	1.389	.051	.017
Missing data: SAT-verbal	-.929	.416	-.046	-.081
University-level transfer	2.453	.753	.110	.181
Female	1.262	.797	.068	.033
High school GPA	-1.083	.449	-.064	.087
Missing data: high school GPA	-1.269	.596	-.066	-.021
Junior college transfer	1.539	.873	.076	-.072
Transfer GPA indicator	-.408	.213	-.059	-.009
Humanities indicator	-.176	.115	-.028	.128
Missing data: father's education	-.624	.522	-.025	-.113
Year graduated high school	-.129	.079	-.078	-.071
Year of birth	.091	.076	.058	.059
Non-system community college	.574	.612	.026	-.040
Social science indicator	.554	.531	.021	.036
Hours transferred	.004	.005	.021	.022
Female non-minority	-.694	.838	-.037	.220
Father's education	.189	.251	.014	.169
SAT-mathematics	-.002	.002	-.016	.371
Humanities indicators	.316	.547	.011	.070
Missing data: GPA university	-.464	.717	-.011	-.049
Missing data: year of birth	1.026	1.880	.012	-.011
Non-repeat	.284	.533	.009	.125
High school located in County A	.181	.392	.008	-.058
Full-time employed	-.169	.340	-.009	.007
Veteran	.209	.531	-.008	-.014
Social science indicator	-.025	.170	-.003	.252
Missing data: mother's education	.079	.587	.003	-.103
Constant	38.479			
R^2	.530			
Standard error of estimate	6.443			
Weighted N = 1,916				

Table 3

Summary of Multiple Discriminant Analysis Based Upon Results of the Essay

Actual scores	Predicted scores on essay				Total
	1	2	3	4	
1	273	103	38	5	419
2	387	504	353	17	1,261
3	18	49	151	6	224
4				9	9
Total	678	656	542	37	1,913

Table 4

Summary of Multiple Discriminant Analysis Based Upon Results of Total Test

Actual performance	Predicted performance Fail	Pass	Total
Fail	296	138	434
Pass	426	1,053	1,479
Total	722	1,191	1,913

rounding errors in the analysis.)

Results

The first test score analyzed was with the regressand of the reading scores. The analysis is given in Table 2, and the multiple correlation squared was .530. The first regressors entered into the analysis were the SAT-Verbal test score and the cumulative GPA obtained at the university, followed by non-minority status. The implication of these coefficients was that, all other regressors remaining unchanged, a verbal score of 600 would mean 14 points on the reading test over a verbal score of 300; that a 3.5 GPA was five points over a GPA of 2.0; and that non-minorities scored 6 points higher when compared to minorities of similar characteristics. Of the strongest endogenous regressors, being an English major added 3.8 points, while being a business major subtracted one point. Having taken English composition after 1971—at this university or other institutions—showed a negative impact on the reading score of about two points. The other endogenous variables showed little systematic impact on the reading score.

The analysis with the essay score as the regressand resulted in a multiple correlation squared (R^2) of .194 and a standard error of estimates (*SEE*) of .534 relative to the scoring system of 1, 2, 3 or 4. Similar to the reading test analysis, among the first variables entered were cumulative GPA (at this university), SAT-Verbal, and Freshman GPA. Being female and non-minority was found to have positive influence on the essay score; being a male minority and taking English composition since 1972 was found to have a negative impact; and being a social science major was found to be a positive coefficient.

In an analysis of success or failure on the total test, the R^2 was found to be .155 and an *SEE* was shown to be .390 on the scale of one for a pass and zero for a fail. The weak R^2 and the large *SEE* made it difficult for the equation to have practical import. It was illustrative to interpret the coefficients as indicating an increase or decrease in the probability of passing the total test. For instance, a student with a 600 on the SAT-Verbal had a 15 percent higher chance of passing than with an SAT-Verbal of 300; a student with a 3.0 GPA had a 5.5 percent higher probability than the student with a 2.0 GPA; female and non-minority students had a 14 percent higher chance; male and minority status students had a 13.5 percent decreased chance of passing; and students having had English composition since 1972 had a decreased probability of passing by about seven percent.*

Predictability of Student Performance

The weak R^2's were further researched using a variant of least squares—multiple discriminant analysis which is a technique of statistically distinguishing among two or more groups. For one analysis the grouping characteristic was the essay score, and for the other it was the pass-fail score. The regressors used in Table 2 were the discriminant variables which were used to measure how the grouping differed. The purpose of using the discriminant analysis was to determine how well the essay scores category could be predicted and whether the same could be applied to the pass or fail grouping. Table 3 contains the summary of how well the essay score could be predicted using these criteria. The predictions were quite weak, with 35 percent of the failure group being predicted to pass. Of those who actually passed, 27 percent were predicted to fail. Note that five of the failure students would have been predicted to score four on the essay.

The discriminant analysis in Table 4 is of the total test result. The analysis indicated that 71 percent of those who passed would have been predicted to pass, and 68 percent of those who actually failed were predicted to fail. Since the techniques are functionally equivalent, the strongest discriminating variables for both the essay and the final results were the same as those found in the regression.

The low level of prediction found in this study is due to a number of possibilities, the first of which is the possible presence of measurement error in the regressor. But questions also exist relative to the reliability of the essay (French, 1974) and its external validity. Unanswered questions affecting the predictability of the essay score are those of student attitudes toward the test and the effect of remedial training.

*Note: Tables displaying the results of multiple correlation analysis with the essay score and failure or success on the total test are available on request from the senior author.

Summary and Implications

This paper has attempted to address the underlying factors influencing student performance on a system-wide language skills examination. The principal factors influencing language skills of college students, as measured by the regents' test, appear to be exogenous or external to an institution. One is left to wonder if what is taught is being tested and if what is tested is being taught. It can only be conjectured as to whether or not the massive testing program is doing more than just focusing attention on the problem. The establishment of remedial programs at each institution is a further attempt by the regents to find a solution. But the problem remains: these writing skills, somewhat mysteriously acquired, appear elusive to measure. Test constructers and researchers have a continuing responsibility to apprise policy makers of the limitations and implications of measurement tools.

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CONFLICTING PRESSURES IN OFF-CAMPUS GRADUATE EDUCATION

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Conflicts found in off-campus graduate education grow out of two accepted standards of high quality. One standard states that off-campus courses should be the same as on-campus courses if the same degree is to be conferred upon completion of the program. This assumes the same course objectives, text, syllabus, library resources, equipment, examination, and instructors will be used. While for many practical reasons this is not always possible, even when it is possible there remains a possible conflict with a second standard of high quality.

This second standard states that off-campus courses should be tailored to the characteristics of the off-campus student. These special characteristics are of part-time students holding full-time jobs with well established career patterns, of students who are mature learners with established ways of acquiring new materials, and of students whose motivation and reward are related to increased salary and benefits. To the extent that their needs must be met with instruction different from the on-campus courses there is a potential conflict with the first standard.

Conflicting pressures are generated by faculty groups on campus who feel a responsibility to insure academic integrity by enforcing the first standard and the off-campus students who wish to have their needs met and who favor adherence to the second standard.

This paper examines these conflicting pressures in the context of an off-campus graduate program conducted jointly by the University of Florida and the Florida State University and designed to provide a graduate degree to community college faculty members in Florida.

The Setting

For the past several years the two established graduate universities within Florida have conducted a series of joint projects to develop and train community college faculty members and administrators. The early phases of the program consisted of preservice training for administrators, and many presidents now serving the community colleges are graduates of these programs. Recently programs have concentrated on in-service training including workshops, institutes and special courses designed to upgrade both faculty and administrators. Two years ago both universities received a grant from the Fund for the Improvement of Postsecondary Education to establish an off-campus graduate degree program for faculty members in Florida community colleges. This project involves six community colleges and over 100 of their faculty members in a two-year off campus educational-specialist degree program. Courses are now being offered at three locations which give two courses per quarter. One course involves subjects of general interest to community college development including the curriculum, students, governance and administration, while the other course involves an individual research project associated with the development of the community college. It is within this setting that individual students needs have been examined and the attendant pressures identified.

The Conflicts

Academic tradition and instructional quality are highly valued at the two universities involved in this study. Both institutions are proud of their separate identities and, especially in these times of diminishing resources, feel strongly attracted to what is known, what is established and, therefore, what is perceived as permanent. The permanent features of graduate education include a residency of three out of four continuous quarters on campus and instruction in graduate programs taught only by members of the graduate faculty. This presents a conflict for community college faculty members who are not able to come to a campus for three out of four continuous quarters unless they give up their jobs for a year. They are unable to lose the income, unwilling to run the risk of losing their jobs and unhappy about having to search for new jobs in a market which is not favorable. The conflict for the university graduate faculty members involves the time to travel six or seven hours a day to meet a course off campus and, once there, the adjustment to the needs of different students. Pressure is added because universities have not traditionally rewarded off-campus service. Even faculty members in well-established extension programs, such as those found in colleges of agriculture, are not always fully rewarded for their off-campus efforts. Finally, consistent with the human tendency to resist change, there is some unwillingness to adjust to a new instructional setting. Faculty members feel that universities, particularly at the graduate level, are spreading themselves too thin already and that off-campus graduate instruction should be left to universities that take off-campus programs as a special mission.

In the specific case of the University of Florida and Florida State, some accommodations have been made, and to some extent these conflicts have been resolved. The present arrangement between the two major universities stipulates that each university will accept the courses and credits of the other, all instruction shall be equivalent to on-campus work, and classes must be taught by the regular graduate faculty. Some accommodation has also been made to individual student needs. Some problems remain. There are variations in admission standards, number of hours required, comprehensive examination procedures, and some organizational differences within the administration of the two universities that may be perceived by students as pro-

gram differences. For the most part, however, it has been possible to offer a program which is roughly similar between the two universities and equivalent to their on-campus offerings.

The first conflict discussed above dealt primarily with the courses being offered. The second deals with the research component of the program. The research conflicts are related to a stipulation that the community college was to participate in the research activities conducted by the student in the educational-specialist's degree and that research projects would be directed toward community college problems. These problems were to be approved by the administration of the community college and certified by them as being problems which were of concern to the college. It was hoped that through this procedure faculty members would be made more sensitive to the needs of the college and the results would be directly applicable to the problems facing the college. Conflicts arose because research projects done on campus problems were not always amenable to the methods required for courses in the degree program. On-campus equivalent courses use dummy data which is programmed to behave in a gentlemanly fashion so that fine points of a method can be illustrated. In the field setting, the data are not always well-mannered or even available, and sometimes fine points of the method are lost. This conflict may work to the advantage of the off-campus program, for there is virtue in dealing with real problems. Many students feel they are closer to understanding a problem when they have seen principles tested in a real environment involving brute experience familiar to them. This does, however, require a separate set of standards for performance, on campus and off campus, and in a sense violates the first standard established in this report. Perhaps on-campus research should be reexamined.

A third conflict has to do with the funding support for the program. Community colleges in Florida are allowed a percentage of their budgets for staff and program development activities. This money is used to pay student tuition, books, and travel to workshops, degree programs or to provide assistance in special projects. It is highly doubtful that without such funding off-campus graduate programs could survive. Since the funding is controlled by the community college, it is advantageous to demonstrate benefit to the community college in addition to benefits provided to the students in the program. This reinforces the need for research projects that yield benefits to the community college sufficient so that the community college will continue to support the program and the participants. To some extent it limits the range of participant inquiry.

A fourth conflict involves time. The community college faculty members are usually not given a reduced teaching load to participate in the program, and many take eight credits in addition to a teaching load which usually involves 15 credits. As a result, an off-campus instructor cannot expect three hours of preparation time on the part of the student for every hour in class. Consequently, much of the coursework is accomplished during the class meetings. Again, this is in conflict with the first standard but does accommodate to special needs of the student as required by the second standards.

Finally, universities are able to support the graduate faculty in both travel and overload pay to the extent that student credit hours are generated. The state of Florida supports both the faculty members teaching the course and the students enrolled. The state benefits from an improved community college system and, as long as these benefits can be demonstrated, the program will continue. It should be noted that benefits are not defined in terms of improving the universities or developing the disciplines or professional schools of the universities. This is in conflict with some university purposes and may account for the relative low priority that off-campus programs have among the university community.

Evaluation Issues

The evaluation issues involved in this project can best be seen by examining the self-interests of the various constituencies described above. The community college seeks to answer the institutional problems and generally to upgrade its faculty. The individual faculty member of the community college involved in the program receives a higher salary by gaining a higher degree upon completion of the program. The universities, in addition to providing service, are also generating student credit hours in graduate programs that have declining enrollments on campus. The evaluation of this program is linked to these self-interests.

There is an ongoing assessment at each of the six community colleges by the college presidents and regular interviews with students to determine the benefits in terms of faculty development objectives. The individual faculty member in each community college makes decisions quarter by quarter as to whether he will remain in the program.

The self-interest of the university can be measured in terms of the university's willingness to modify the requirements for graduate degree programs and to accommodate the off-campus students.

Staff development within community colleges is a controversial subject. On-campus programs seem to be an attrative alternative since they don't compete for financial aid, and they do reduce opportunity costs. However, many observers still feel that any university-dominated model will not meet the difficulties of simultaneously addressing community college needs and university standards for advanced degrees.

Implications for Institutional Research

The first implication for institutional research is funding. Formulas and guidelines are used in about two-thirds of the states to control the allocation of funds for operating expenses of state-supported colleges and universities. The criterion employed in funding formulas is the credit hour of the traditional program, which is not always applicable to the nontraditional program. In many instances, the program might be divided into subject modules which are basically taught by one instructor but extend over one academic year. The conflict grows out of the necessity for a program to establish certain criteria for purposes of funding and to set other criteria for faculty and student performance.

A second implication relates to credit-hour count and faculty work load. If the off-campus program does not follow a credit-hour guideline, the problem of faculty work load becomes more complex and difficult

to justify. Further, the nature of an off-campus program requires additional time—as faculty travel time—to be considered in the faculty work load count. Full-time equivalent (FTE) faculty is usually justified by the number of FTE students. However,off-campus programs encounter the problem of defining an FTE student. As in the case of the current joint project of the University of Florida and Florida State, a student might be taking what is considered a full-time graduate load for the on-campus program. The contention is that the participant in the off-campus program is not considered a full-time student since he/she is employed full time in a college or university position. Furthermore, student-faculty contact hours do not compare to the traditional campus programs. A related conflict has to do with seeking financial aid for the off-campus program. Participants not recognized as full-time students may be claimed ineligible by the state for veteran's benfits. This would be a problem in those off-campus programs where the major cost of the program falls on the student. If the off-campus program is affiliated with a private institution, it is almost inevitable that the program costs will be passed on to the students. Fees must include the expenses of travel of instructors to the off-campus locations, mailing of materials and books to the students from the central office, added administration to coordinate off-campus centers with the central office, and other communication expenses that are vital to effective operation.

Meeth (1975) suggested an alternative to the credit hour which nontraditional programs might find more appropriate for funding purposes: the student-faculty contact-hour ratio for determining instructional costs. One percent, above and beyond faculty salaries, would be added for planning, development and implementation. This procedure would seem to be a more meaningful and reliable measure of faculty effort, especially in the case of a nontraditional program.

In a public institution, the problem of funding off-campus programs becomes a major and sensitive issue for those involved, as well as for those who resist such programs with all the conflicting pressure generated.

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SMALL COLLEGES: SOME GUIDELINES TO SURVIVAL

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La Verne College

None of us here on the panel needs tell any of you that this is a tough time for small colleges. The litany of programmatic, budgetary, and administrative woes that currently beset small colleges is well chronicled throughout the literature of higher education. My intent, rather, is to suggest five guidelines for approaching those challenges and crises that face all of us. As a preamble to these strategies, I will describe some interesting developments I see occurring in higher education–developments that I think bear fundamental import for small colleges.

In a speech like this, the temptation is great for both you and me to look to the extremes. I am tempted to tell you all the vast generalizations and axioms that you already know; and you are tempted to expect very pragmatic, step-by-step descriptions of how to help your institution, something that no one can do for you because every institution poses different dilemmas. I hope we both avoid these tempting extremes. For my part, I intend to take a middle route of analysis–suggesting some specific ideas and guidelines for your consideration, but ideas that are not so specific that they supplant the need for creativity in their application. Let me borrow a story I have used elsewhere to illustrate the problem of looking for easy solutions:

> There once was a poor farmer in India who had a small flock of chickens. When his chickens began to die, he went to his guru and asked, "Oh, Master, what should I do? My chickens are dying." The guru asked, "What do you feed them, my son?" "Wheat," replied the farmer. "Then feed them corn, my son."
>
> The farmer left only to return another day. "Oh, Master, my chickens are still dying," he reported. "From what do they drink, my son?" queried the guru. "Bowls, my Master." "Ah, use a trough, my son."
>
> The farmer left pleased, but returned yet a third time. "Master, oh Master, my chickens are still dying. What should I do?" The guru paused and then asked, "Where do they live?" The farmer explained, "In a wood shack with four walls." "Ah, my son, remove the walls. Let more air in."
>
> The farmer left once again, intent on saving his chickens. A few weeks later, however, he returned. In a sad and resigned voice he announced, "Master, oh Master, my chickens are all dead." The guru shook his head and with a sigh, intoned, "Tis a pity, my son; I had so many more solutions." (Taken from *Strategies for Significant Survival* by Stewart and Harvey, 1975).

I hope the ideas and suggestions I am about to pose come before all your chickens are dead.

For purposes of research and consultation, I have recently had the opportunity to talk and to work with a number of small colleges across the county. In my travels I found, of course, evidence of fiscal crisis and concern over survival. But just as often I found basic excitement and grit. Small college administrators and faculty alike were determined to do more than survive–they were determined to do some things they felt were important and let the question of their survival rest on their achievements. The unrecognized paradox is that fiscal concerns are leading more to a search for significance than a watering down of the academic enterprise. Further, it appears that this search for significance is leading to a higher probability of physical survival. In the long run, social institutions do not survive by merely trying to hang on but, rather, by carrying on important and valuable activities. In fact, an irony may well be noted by future historians–growth may have led to the watering down of the academic enterprise, and non-growth to the reassertion of distinctiveness, purpose and significance. Both these recent and previous contacts with small colleges have led me to the conviction that one should talk not of strategies for survival but, instead, of strategies for significant survival.

Another potentially significant phenomenon that I have begun to see develop in higher education is that of leadership. I have long been struck by David Reisman's description of higher education as "a snake-like procession with Harvard at its head." (1956) As one part of the corpus moves in some direction, so will the others, inevitably in their natural order and time. Imitation of a few traditional leaders has been the hallmark of most colleges. That hallmark, however, may now be changing as the leadership in higher education begins to shift. The head may well be following the tail; or perhps more accurately, there may be many separate heads now posing different directions for the corpus. Small colleges are now in the position to be leaders in higher education, and this is a position that has been reserved historically for but a few prestigious colleges.

This opportunity is now extant because the Berkeleys and Columbias are just as concerned about fiscal problems as the Pitzers and Ursinuses. Moreover, the large colleges lack some of the qualities that would allow them to deal with their dilemmas as creatively and meaningfully as the small colleges. Because of size, small colleges can reorient themselves much more quickly than larger ones. Faced with crisis, small colleges, particularly independent ones have greater internal control and can more readily respond with innovative or reconsidered programs. They are able to summon up greater community cohesion to work toward common and necessary purposes. This is not to say that large colleges are incapable of such resolve; it is just that it is much harder for them to do so. Size and heritage undercut them. Most small colleges have a tradition of community and self-reliance, and hence, are better prepared to display significance in a nongrowth era. It is the small colleges that may be the curricular bellwether of the 1980s.

Let me briefly suggest some emerging or potential areas where small colleges can exercise leadership.

GUIDELINES TO SURVIVAL

Contractual and experiential learning: Much is being done in some colleges to adjust the curriculum to the particular needs of students, both nontraditional and traditional. Some of the most creative and worthwhile experimentation I see happening is going on in small colleges.

Faculty development: One of the fads that has hit higher education within the last three years is that of faculty development. While some of that fad will ultimately be junked as useless, much, I believe, will be retained as important to the health and survival of colleges. Many small colleges, and the Council for the Advancement of Small Colleges in particular, are taking leadership in testing out these programs. Many larger institutions are looking at successes and failures at small colleges to see what to do.

Faculty tenure policies: If what Cartter and others project about tenure is correct, and I believe it is, then certainly something has to be done about present tenure policies. There is some experimentation going on with alternative policies, such as term contracts. Many are waiting for a large prestigious college to make some significant move in this direction, but I doubt if it will happen. Rather, I suspect small colleges, for the sake of survival, will try successful new approaches to faculty security and lead the way in tenure alternatives.

Quality control of nonresidential educational programs: For the sake of FTE and some ideological commitment, there has been a major thrust toward establishing nonresidential educational programs. The dilemma is that of quality control—how to maintain some semblance of quality through careful monitoring. Accrediting associations are particularly plagued by this problem. Small colleges can be especially helpful in resolving it.

Nongrowth management: It does not look as if many colleges will experience growth in the next two decades. But rather than waiting for the ceiling to fall in, I see many small colleges taking the leadership in planning ways to grow smaller and like it. This ultimately may be the most important area of leadership.

These are but a few of the possible areas where small colleges can demonstrate leadership. Such leadership is already appearing and, as successes become more prominent, will undoubtedly increase.

A third intriguing thrust I see beginning to emerge is a renewed sense of craft. Efforts at faculty and organizational development, efforts at planning, and efforts at evaluation are not being aimed at the university's definition of excellence but, rather, at reasserting that sense of craft, of doing something very well without pretense or hauteur. Craft focuses on skill and artisanship in pursuing whatever purpose one has. In earlier centuries it wasn't important whether one was crafting something simple, like a cup, or something more profound like an embossed shield; the honor was in the degree of excellence with which one performed his craft. Purposes can be simple, but the achievement of the purpose must be grand. Many small colleges seem now to be recasting themselves in the light of an internally defined sense of craft. "Do well what you do, and don't worry if your purpose is simple." I must confess my bias; I like a world that has some sense of craft.

Lest this paper appear too Pollyannish, let me also suggest a fourth and less heartening development I see occurring—cannibalism, each of us trying to devour a little of someone else. In times of stress people can either turn on each other or help each other. Caged rats who get along well attack each other when electric shock is applied to their cage, but they stop fighting when the current stops. We can hope that on the human level a helping attitude will take precedence over such aggression, and at many places it has. At just as many institutions, however, aggression is winning out. Cannibalism, though, is seldom a reaction to a state or reality; it is a reaction to a perception: I think I'm in trouble so I turn on my colleagues. Sure, there are serious fiscal and management problems that face small colleges, but seldom are these solved, in any long-term way, by devouring someone else's resources or students. Cooperation must take precedence over cannibalism. If someone else is biting you, don't bite him back, just stop him from biting you. Then maybe the two of you can find some food together.

One more point before I go on to suggest some strategies for significant survival, and that is the matter of definition. When I speak of small colleges, I refer to both public and private. Obviously the largest number are private, but sometimes small private colleges forget the commonalities they have with smaller public institutions. A public state college of 6,000 students may seem large to a private college of 1,200, but their psychic states are the same. What demarcates small from large is not body count, but perception of intimacy and community. A Westchester State College ultimately has more in common with a Franklin and Marshall than with a Penn State University. Some of these psychic commonalities need to be recognized and built upon.

Let me now turn to some general guidelines for significant survival. In doing so I must forward a caveat—beware of seeking out simple answers to complex and difficult problems. In addition to some very positive experiences with small colleges, I have also seen some attempts to take the quick and easy road to survival. Simple solutions abound: "If only we put more admissions people on the road." "If only we would start some nontraditional programs." "If only we could get some outside money." "If only we became more efficient." Our responses are quick and at times desperate. Our "if onlys" make us look more like contestants on "Let's Make a Deal" than academic professionals solving problems—we are willing to trade our traditional students in box 1 for nontraditional students we think are behind curtain 2. In making such trades, some of us may achieve desirable results, but most of us get nothing but a bad reputation. Therefore, a consummate point needs to be made here: The suggestions offered in this paper should not be imagined as easy solutions to complex problems. They are beginnings that can spark solutions, but they are not ready-made formulas. Five guidelines seem particularly basic for significant survival.

First, each institution of higher education needs an effective radar system to alert policymakers to impending danger. Dennis Meadows (1973) makes a striking analogy that illustrates this requirement. In talking of the international ecological situation, he conceives of the world as a ship commanded by 15 different captains, all of whom speak different languages, and all of whom, being nearsighted, can see only five feet in front of the ship. Yet the ship must have a 10-foot clearance in order to maneuver. This dilemma currently faces higher education. By the time we have identified our problems, they

are upon us. We need something comparable to radar to inform us of obstacles. If we fail to anticipate them, we shall surely bump into them. We may survive rather well in the short run, but without an early warning system we shall inevitably be wrecked. Planning and institutional research are the necessary and intrinsic elements of an effective early warning system. They provide us with facts about where we are heading and foresight about what we may encounter as a result.

One of the fascinating ironies of fiscal crisis in higher education is that when costs must be slashed, planning and institutional research are often two of the areas heavily cut back. We fail to maintain our radar system when we most need it. Part of the reason is that these two functions do not seem to be considered fundamental to academic excellence. In times of crisis we assume that we can rely on instinct and gut-level information to diagnose present conditions and suggest future directions. We avoid planning, fearing that we will become locked into a single plan, and what we call flexibility and responsiveness is often ad hoc, informal, and inaccurate decision making. We accept all possibilities in order to avoid choosing among them and doing the hard work of looking ahead to our long-range needs. In such cases, we are really being irresolute rather than flexible. Planning and research are critical in making deliberate judgments toward significant survival.

Second, significant survival assumes that quality attracts. Institutions that do an effective job will be those most likely to survive—most likely to attract able students and faculty and to acquire outside sources of money. This assumption about quality is not simple, however. For one thing, the definition of quality itself is shifting. Once determined by the advanced degrees from prestigious institutions held by one's faculty or the selectivity of one's student body or the heritage of one's institution, quality is now more dependent on what the institution does. Its effects are more important than its inputs.

Assuming that increasing the quality of an institution will increase its attractiveness rests on the assumption that students will have adequate information for making intelligent decisions. Students will clearly choose a legitimate external degree program over a diploma mill when given accurate information, but the key to such decisions is the provision of information. Laws for consumer rights and demands for public accountability are efforts to provide people with the knowledge they need to make intelligent choices among alternatives, and thus let quality attract.

To assure that quality attracts, a college has to do four things: (1) decide what is important to do; (2) determine what contributes to achieving these goals; (3) accomplish its purposes; and (4) clearly reflect these achievements to the public. Running throughout much of the literature is the basic tenet that quality outcomes will produce increased income. A concern for effectiveness should dominate decisions. Concern, however, is insufficient; quality must be publicized and demonstrable. Simply assuming the presence of quality is no longer a viable approach to survival.

Third, higher education has to look outside of itself for guidance. It must be consumer oriented. To be consumer oriented is not to be consumer dominated, however. The desires of consumers are important for guiding program or policy development, but they do not need to control institutional decisions. Between the two extremes of neglect of consumer demands on one hand and slavish adherence to consumer demands on the other, a middle ground is needed.

Perhaps the most important external agent in terms of clientele is government. Some would argue that major involvement with federal, state, or local government is overly constricting for a college or university. I suspect this is also a mentality of the extremes. An institution can be aided by government without being government dominated. In fact, closer relations between higher education and government are probably unavoidable. If we choose to shy away from government involvement, we are more likely to be controlled by it than if we confront it directly, even enthusiastically, and establish a healthy middle ground of cooperation. Government policy can be affected by higher education just as institutional policy is affected by government. The future of higher education is far from preordained. It will depend wholly on public values and beliefs. Unavoidably, government is one of the most profound agents of the public will. As such, significant survival for higher education must involve working with federal, state, and local governments to develop strong, even relationships.

Fourth, higher education has to maintain a pruning mentality. In the growth years of the 1950s and 1960s, whenever colleges wanted to change, they merely expanded. Such an approach is no longer possible: accretion may have to give way to displacement. If something new is to be added, something else may have to go. Often those things that go are quite desirable; they are nonetheless of lower priority. These are times when cutting back in light of priorities is necessary. But for significant survival, cuts must be made not with an eye to short-term advantages but with a concern for the long-term benefits of pruning. Sometimes we cut planning staff or student services, to name just two areas, because it appears that they are peripheral to traditional academic pursuits. Such an approach may well be shortsighted, for it fails to acknowledge the long-term concerns of the institution. Pruning requires distinct skills and knowledge. Anyone can lop off programs and staff, but it takes some knowledge of institutional needs, a sense of timing, and careful restorative work to create long-term institutional health and growth. Higher education requires policy makers who possess the skills of evaluation and organization development, knowledge of institutional dynamics, courage to make hard decisions, and a fair amount of patience.

Fifth, and finally, institutions have to work at significant survival. Patricia Cross (1974) has compared the recent development of American higher education to human development. Educational growth and autonomy during the 1950s and 1960s resembled the growth and autonomy of human beings in adolescence and their early twenties. Colleges and universities are now in those years of identity stabilization comparable to those of people between the ages of 25 and 35. This analogy, in addition to giving an excellent perspective on the current state of higher education, also offers a fine illustration of the need to work at significant survival. Just as most teenagers and young adults are able to keep fit without concerted effort, so too, until recently, was higher education. Individual institutions might incur illness, but the bulk of them were reasonably fit. Like many

people, however, they failed to establish the kinds of habits that would keep them fit in their nongrowth years. Like those adults, we are just now becoming aware that we have to work hard to stay as healthy as we once were. We recognize that if we don't do something now, it will be even harder in the future. For survival we may have to diet still more, and that is not a very pleasant prospect.

Just as with dieting, a major source of resistance to survival efforts is the work their implementation requires. Defining purposes clearly, devising appropriate curricula, and developing faculty in those curricula are all hard work. Careful organizational development, research, and planning are taxing and draining. Recruitment of students, reorganization of student services, and maintenance of government contacts are demanding and exhausting. Facing the prospect of personnel cuts is threatening and demoralizing. None of these strategies is easy. They require much work. With effort, however, they should aid any institution in surviving significantly.

But work and planning are not enough. Ultimately there remains one elusive quality: boldness. The analogy I like best is that made by Patricia Foster (1976):

> Perhaps the most perfect example of boldness was Lindburgh's flight to Paris in 1927. He had to be bold, but he was also the pilot best prepared to make the attempt. His background gave him more weather experience than any of the others who tried. He used the best engine of the day, the plane was built to the most up-to-date standards and he put everything in it the state of the art had for his flight. He tested the airplane, he studied the weather carefully and plotted his navigation precisely. Then, equipped as completely as technology would allow in both airplane and man, he boldly took off for Paris.

Boldness wasn't enough; he had to plan, to carefully consider the possibilities and make the best informed judgments. But without that boldness, all preparedness would have been for naught.

Small colleges, if they are to succeed and, indeed, flourish—must demonstrate such boldness, for in timidity and simple imitation there is no value to survival. The seventies have brought us challenge and conflict. Now I hope we have the boldness and preparedness to meet those challenges.

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ORGANIZATIONAL RELATIONSHIPS BETWEEN INSTITUTIONS AND STATE COORDINATING BOARDS

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In addressing the area of organizational relationships between institutions and state coordinating agencies, I am going to refer to a state planning and coordinating agency in a nongoverning sense and look at agency/institutional relationships in that context. In addition, in keeping with the theme of this year's Forum, I feel we should explore the organizational relationships within the context of conflicting pressures.

The Tasks of the State Planning and Coordinating agency and the Contribution to Conflict

The very existence of a state planning and coordinating agency is a source of basic conflict with operating institutions. Such agencies exist, primarily, to provide an overall, policy-based perspective on postsecondary education as a public service. Their mission is that of determining the need for postsecondary services—isolating and establishing priorities among competing needs, and addressing questions related to the level of resources needed for meeting those needs. They exist, also, to coordinate and, by inference, to optimize the delivery of services. The combined functions give varying degrees of control over the programs provided by the various institutions.

The state planning and coordinating agency is intended to be relatively independent in its judgment and is not intended merely to aggregate all of the plans, ambitions, and activities of the institutions. Rather, the perspective which must be maintained is extra-institutional and independent of both executive and legislative operational control.

Therefore, the very existence of the state planning and coordinating agency represents a reduction in the autonomy institutions enjoyed prior to the establishment of the agency and is a source of significant potential conflict. This fact needs to be understood, appreciated, and considered in the development of improved organizational relationships.

The State Planning and Coordinating Agency as an Instrument of Public Policy

Another practical source of conflict between institutions and the state planning and coordinating agency has its roots in organizational theory. An organization, when it is first established, has a highly developed sense of purpose—a sense of mission. It sees itself as an instrument, working to achieve certain results—in the public sector, as an instrument of public policy.

As the organization successfully achieves its purposes (or decides that certain purposes cannot be achieved), it develops another set of purposes associated with the preservation and the maintenance of itself. In this phase, self-preservation and the interests of associated groups (including its own employees) often are paramount. Developing standards and rigid conventions, and adding additional functions designed to ensure stability, becomes the norm. As a matter of fact, stability often becomes the prime purpose. In this phase, the organization has become institutionalized.

Institutionalization is common in varying degrees in nearly all large, mature organizations. The incidence is extremely pronounced in the public sector where evaluation of results is more difficult. (I should add that not all institutions are institutionalized, and not all state agencies have escaped the results of the maturation process.)

Institutionalization is compounded when the organization feels that it is under attack from outside critics. There is an almost insurmountable desire to "pull the wagons into a circle and stand off the hostiles." Regrettably, but quite naturally, the state planning and coordinating agency is often viewed by institutional managers as one of the hostiles. As a matter of fact, state agency personnel are sometimes as leaders of a warlike band of critics. This is understandable since the agencies are generally young organizations with a highly developed sense of mission, viewing themselves as instruments of public policy. They generally have little sympathy with the nuances, complexities, and difficulties outlined by institutional representatives.

Even though both the institutions and the state planning and coordinating agency subscribe to the same overall goal—the furthering of educational opportunities of high caliber—the perspective is different and must be recognized as such. One example was a recent proposal in my state for a graduate degree program based on a desire to find additional work for faculty in a department with declining credit hours. In this case, we urged the institution to conduct a needs assessment. Following that assessment, it became apparent that there was indeed a need for the program, and we ended up supporting it on that basis. This is one of the more fortuitous occasions where, although the prime factor for developing the program was not the needs of the area, the program was supported after state planning and coordinating agency analysis determined that unmet needs existed.

What Are We Really Arguing About?

Are institutions and state planning and coordinating agencies arguing about the how or the what? As we can see, there are a number of factors which produce conflict. One of the major things a good understanding of organizational relationships can do is to minimize the points of conflict and determine if the argument is really over procedures or substance. The state planning and coordinating agency must ask itself if its perspective of the "ideal" in procedures is getting in the way of its mission to have a clear understanding of state needs, goals, and objectives. It must ask itself if it is arguing more about how a thing is being done than about what is

being done. We all, from time to time, are subject to the "if I were king" syndrome where, if we had total charge, we know we'd make absoluately sure everything was done in the best possible way. It is necessary to recognize those occasions and put that feeling in its proper place when substantive points are at issue.

The Role of Organizational Relationships

It is my contention that good organizational relationships between the agency and the institution can minimize conflicts generated by misunderstanding. There is no more sapping phenomenon than arguing about nonissues! In exploring good relationships, we should look at the three primary types of organization with which a state agency needs to work (or establish, if they are not already in place).

Existing structures. It almost goes without saying that it is necessary to work with existing structures, institutional, interinstitutional, and segmental. These structures generally predate the state agency and have a myriad of conventions and interactions associated with them. I would characterize the reasons for developing good working relationships with existing structures as essentially defensive. You might not gain much in the short run, but you can cause significant problems for the long term if you do not have good working relationships.

Practitioner structures. These groups, generally interinstitutional, can be extremely positive aids to improved understanding and minimized procedural problems. Business officers, academic deans, graduate deans, directors of institutional research, and so on, can assist in isolating policy problems and can provide valuable advice and counsel. It should be noted that it is necessary to keep in close touch with the existing structures in working with these groups of specialists.

Agency-created structures. Normally, the state planning and coordinating agency will find it necessary to create some structures of its own. In Washington, we have a student advisory committee and a faculty advisory committee. We have also used various planning committees and task forces that were quite helpful. Extensive use of these mechanisms can, however, be extremely upsetting to the existing power structure. As a matter of fact, the key to good organizational relationships between the state agency and the institution is the observance of proper conventions and the long-standing power structure in the development and use of both the practitioner- and agency-created mechanisms. I think this is an important point to bear in mind, even if several of the sources of power have left the old-line, existing structures. Legislative or executive actions may have encouraged the development of new power lines, but the unthinking avoidance of existing structures, even under these circumstances, can doom an otherwise worthwhile effort.

The approach that we use in the state of Washington, while it is, of course, unique to our environment, organization, and responsibilities, may be generalizable to other states. Prior to the establishment of the Council on Postsecondary Education (agency), there were a number of interinstitutional organizations in operation, including a council of presidents of the 4-year colleges and universities; interinstitutional committees of academic people, business officers, financial aid officers; and various community college committees. In addition, the council has since appointed student and faculty advisory committees, as well as various task forces and planning committees. Some basic guidelines are followed in creating the various committees and working with them:

1. Seek out the advice and, where appropriate, consent of existing administration structures and major interinstitutional organizations in the creation of special groups.
2. Make clear the role of those groups which advise the council, or the council staff. Generally, those groups are advisory and not controlling, since the state planning and coordinating agency cannot abdicate responsibility for its recommendations.
3. Develop a commitment to the fact that there is more to be lost in arguing about data and procedures than over policy differences. (I might inject here the point recounted to me by one of Lyman Glenny's study team. He was surprised at the degree of full and open communication between Washington institutions, the council, and the legislature concerning base data information. I believe that such full and open communication is a direct product of the development of such a commitment.)
4. Use existing data sources whenever they are close enough approximations for the work to be done.
5. Encourage legislative and executive staff involvement.
6. Allow for at-home consultation by members of the committees, and do not attempt to force the members to make commitments which they cannot observe.

We feel that the results of this process are (a) agreement as to basic data parameters, (b) concentration on policy questions, (c) improved advice from institutional and other agency sources, (d) an added source of research and study manpower, and (e) improved human relations, plus an opportunity to exchange views in an open environment.

Summary. Careful analysis and understanding of the complex power structures and organizational alignments can prove to be beneficial to both the agency and the institutions. As the opening song from *The Music Man* points out, "You've got to know the territory." A basic obligation of a state coordinating agency is to know the territory—work within it and *with it.*

REALLOCATION OF TIME AND RESOURCES: THE NEW OSHKOSH CALENDAR PLAN

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Background

In 1971, the University of Wisconsin-Oshkosh (UWO) began operating under budgetary and enrollment constraints that, if continued, threatened its ability to function as a university. During that time, attempts to circumvent the financial exigency through the most traditional methods proved ineffective or inappropriate. The retrenchment was traumatic in contrast to the previous decade of growth. A series of events had placed the institution in this untenable situation. Increased competition from vocational institutes, new public two-year colleges, and even a new public four-year institution in close proximity resulted in a reduction of UWO's share of the college freshman pool. This situation was accentuated further by declining college attendance rates among high school graduates.

Between 1970 and 1974, full-time equivalent enrollment declined 15 percent, and, during that same period, an enrollment-based budget formula decreased operating funds by the same proportion. The university utilized its budgetary flexibility to base-reallocate among various programs and managed to cut the smallest amounts in instructional areas by significant reduction in other areas. The number of needed faculty positions declined by 10 percent during that period, and in the spring of 1974, 22 tenured faculty were laid off.

The experiences of UWO indicate that the institution, desiring to alter the steady-state environment, must look beyond minor manipulations of personnel policy for a long-term solution. It must come to grips with an examination of its total program and services and assess the degree to which they will remain attractive during a period of increased competition for a declining pool of students. Institutions which meet the needs of their constituencies in unique ways will be more likely to escape the drastic effects of diminishing enrollments and resources than those which continue old policies in a new era for higher education.

To counter these events, an innovative Oshkosh calendar was proposed in 1974 by a new university chancellor who came with the expectation that the campus environment was ready for a change. The institution, therefore, was predisposed by the events of retrenchment to favorably consider any reasonable alternative to past practice that gave promise of relief.

The discussion of the proposed new calendar was done in a manner that (a) attempted to share fully all information on past and projected university problems, (b) identified the characteristics of the program in enough detail so that everyone was aware of the major elements and (c) encouraged opinions in the developmental stages at all times and through all levels. An open atmosphere was achieved by the administration when it published a series of thirteen "calendar papers," each dealing with a specific aspect of calendar reform. In addition, administrators met individually with more than 40 different departments to share information and obtain reactions.

The concept was initially presented to the faculty in August 1974. In October of the same year, a faculty referendum was conducted, with 90 percent of the faculty participating; about two-thirds of those voting favored the new program. The concept also carried the endorsement of the faculty senate, the Oshkosh Student Association, and the student newspaper.

A calendar coordinating council was formed to organize the new program with 12 faculty-student-administrative committees. Each committee dealt with a separate aspect of the new calendar, such as academic policies, curriculum, registration, faculty responsibilities and evaluation. Their recommendations went to appropriate faculty, student, or administrative groups before final review by the chancellor. The council was organized as a kind of "kleenex committee" that could be discarded once its primary function was served. As a result of their activities, in a period of seven months the university was able to identify and resolve many of the major problems that can accompany an institutional change of this magnitude.

Definitions of Calendar Modules

The range of courses (modules) offered at UWO during a semester, with the description or rationale for each, is discussed below. Categories are not exclusive, so that some courses fall in several groupings.

14-week courses: Fourteen-week courses are identical to traditional 17-week courses, but utilizing 60- rather than 50- minute periods so that total class time is the same (17 weeks X 3 periods X 50 minutes = 14 weeks X 3 periods X 60 minutes).

7-week courses (first 7 weeks): Seven-week courses meet 6 periods a week for 3 credits or 3 periods a week for 1.5 credits or a comparable combination (for course work requiring more intensive involvement than in a 14-week sequence).

7-week courses (second 7 weeks): The second seven-week courses meet as above but also permit students to register for the first time in the middle of the semester to support work or family obligations.

3-week courses: Three-week courses are intensive courses with time and credits variable.

1-credit courses: One-credit courses are self-paced, autotutorial, and some use computer-managed instruction (CMI) and computer-assisted instruction components (CAI).

Self-paced (continuous registration): Self-paced courses are autotutorial and provide access at any time during the semester with completion dates determined by student.

Calendar Objectives

The new calendar provides the university with the flexibility to

a) permit a calendar of two 14-week semesters to operate without inhibiting the operation of supplementary alternative calendar imbedded within it

b) offer courses of 3, 4, 7 or 14 weeks in length

c) provide continuous registration multiple entrance and exit points for students to facilitate stop-out opportunities and increase options for the part-time learner and adults

d) assign faculty to teach during various terms, including the summer, to increase productivity

e) permit faculty to concentrate their teaching loads so that blocks of free time are established for research, curriculum development and similar activities

f) permit faculty to plan 5-month periods of non-university activity in one year by teaching more intennsively in another

g) establish an in-service " faculty college" during two 3-week terms each year in which faculty offer courses to their colleagues, either discipline-based or dealing with new approaches to education techniques

h) provide additional compensation to faculty for meritorious projects performed outside their (9-month) contractual employment periods.

Flexible Scheduling

The careful and planned development of courses within the modular calendar have led to opportunities for students to plan unique academic schedules. For example, a student may reduce the course load during the 14-week semester by taking four 3-credit courses, and pick up 3 more credits by taking one course in the 3-week term. Conversely, a student may overload by taking six 3-credit courses, each running 14 weeks, and a 3-credit course during the 3-week term. This alternative, available to the most capable students, permits a student to earn a baccalaureate degree in less than three years by attending two summer sessions.

Students may depart more radically from the traditional semester pattern by combining the more intensive modules. For example (figure 1) a full load of 15 credits may be earned in a semester with a student never carrying more than two courses at one time: two 3-credit courses during the first 7-week term and the second 7-week term, and one 3-credit course in the 3-week term.

History (3 Credit) Speech (3 Credit)	Literature (3 Credit) Geography (3 Credit)	English (3 Credit)
First seven week	Second seven week	Three week

Figure 1. Sample student's semester course schedule.

By combining courses offered over 14 weeks with 7-week courses, 3-week courses, and self-paced auto-tutorial courses, students can put together programs which vary their workloads in many ways to meet their own personal needs and learning styles. In a similar manner (figure 2), vacation times can be flexibly arranged to meet personal requirements for work, leisure, or family obligations.

Work	History (3 credit) Speech (3 credit)	Vacation
First seven week	Second seven week	Three week

Figure 2. Sample student's semester course schedule.

Initially it was thought that scheduling options in the traditional pattern would predominate and that modular course scheduling would increase slowly. The faculty were encouraged, not required, to develop 7- and 3-week courses, and students, obviously, were not familiar with utilizing modular course options. However, it became evident early that interest in and need for the program was even greater than anticipated. Actual enrollment data for the 1975-76 fall semester is presented in Table 1.

Of approximately 31,000 total course enrollments during the fall semester, about 69 percent were in traditional (14-week) time sequences. An additional 16 percent occurred in 7-week courses, and 15 percent in the 3-week period. Modular courses were very popular, with fully one-quarter of all enrollments in one-credit courses either as independent academic units or as self-contained subdivisions of longer courses . Self-paced courses continued to occupy a significant place in student choices, with over 17 percent of all course enrollments in this individualized format.

These data indicate that significant diversification of the curriculum has taken place during the first semester of the new program. Although the new calendar can be considered to be a "radical" approach to the use of time, one calendar can be considered to be a "radical" approach to the use of time, one of the large number of alternatives it makes available is the traditional semester with which many students and faculty feel most comfortable.

There are at least three learning advantages offered by the 7-7-3 calendar. First, students are able to concentrate on fewer subjects at one time. Many students currently carrying five or six courses each semester are not able to focus attention sufficiently to maximize learning. They must "fire-fight" courses as each makes demands. The new calendar allows students to concentrate on fewer courses for shorter periods while still completing the same number of credits over a semester. Second, students who are unsuccessful in a particular course are able to repeat it sooner, thereby hastening their return to good standing—an important factor in lessening attrition. Third, highly motivated students can complete the baccalaureate degree in three years, or both baccalaureate and master's degrees in four.

Curriculum Innovation

The new calendar increases the flexibility necessary for curriculum change and development. To begin with, faculty select sequences of time that best meet the needs of the course material, rather than forcing each and

Table 1

Fall Semester 1975-76
Course Sections and Enrollments

Module	Number of courses	Number of courses	Number of student/ course enrollments
14 weeks	1,047	2,005	21,634
1st 7 weeks	136	232	3,464
2nd 7 weeks	81	133	1,608
3 weeks	82	214	4,682
1 credit	293	657	7,726
Self-paced	155	443	5,251

every course into an identical time frame. Furthermore, by breaking the lockstep schedule of the traditional semester, blocks of time are opened to faculty for planning curriculum development. For example, the 3-week period at the end of a term may be used to revise or develop course content. Reducing the teaching load during a 14-week period has permitted a faculty member to develop a new, intensive 3-week course and offer it almost immediately.

The calendar allows faculty members to arrange their schedules to make teaching in interdisciplinary courses much more common than it has been. Departments have utilized the 3-week term at the end of the semester to explore new possibilities for case study, independent study, or intensive review courses for students who want the added experience or who need to improve skills.

The calendar has encouraged variable credit courses in which students enroll in an elective for less or more than the standard credit. These one-credit courses are designed to stand alone as one-credit modules within interdisciplinary combinations or to serve as introductory modules to be followed by one or more credits of independent study. Departments have grouped three or more courses offered intensively during the 14-week or two 7-week terms and offered an integrator course during the 3-week term, as an applied studies project.

Flexible Staffing

The new calendar reorganizes the faculty load dimensions of the academic year to provide greater opportunities for course development, university governance responsibilities, research, and other professional activities. Faculty responsibilities remain the same as under the traditional calendar: an annual teaching load of 24 (standard college hours) undergraduate credits and campus-based responsibilities, other than teaching, extending over 34 weeks; however, the responsibilities are distributed in a different and more effective manner. Under the traditional calendar, all classes were conducted for the full length of the 17-week semester, during which time a faculty member was also expected to engage in development, governance and research. Under the new calendar, the 17-week semester is broken into smaller time components, used by the faculty member to separate the time demands of governance, research and development from teaching. Because the longest course option available is 14 weeks, many faculty have experienced a slightly increased teaching load during this time period. On the other hand, for faculty teaching 12-credit loads within the 14 weeks, a 3-week period at the end of each semester is free of any teaching responsibilities. Some faculty have chosen to teach part of their load during the 3-week term and have had load reduced proportionately during the 14-week period.

Faculty members who complete their teaching responsibilities in less than 34 weeks engage in other campus-based professional activities during additional periods to bring their total to a regent-mandated 34 weeks. During such periods, faculty members are required to be accessible to students and colleagues and to engage in professional activities related to the university governance curriculum development and student counseling. Some faculty have been required to teach during the summer semester and have taken a 7-week module during the fall or spring semester as their vacation period.

Table 2 shows the number of faculty functioning under various alternatives during 1975-76.

Table 2

1975-76 Faculty Assignment by Term

Assignment schedule	Summer 4	4	Fall 7	7	3	Spring 7	7	3	Number of faculty	Percent
Traditional			X	X	X	X	X	X	414	80.9%
3-week vacations	X	X	X	X		X	X		38	7.4
Half semester off	X	X	X	X	X		X		24	4.7
Extended summer off		X	X	X	X	X	X		26	5.1
2-year contract			—Individualized—						10	1.9
Totals									512	100.0%

As would be expected during the first year of a new program, about 80 percent of the faculty chose to teach a traditional schedule. However, many alternative possibilities are being explored by about a fifth of the faculty. It is possible that the proportion of faculty selecting unusual schedules will significantly increase in the future as faculty become familiar with the range of alternatives and their effects upon professional development opportunities.

The new staffing patterns offer many advantages, some of which were not immediately obvious and which the university is only now beginning to understand. For example, it is easier now to include portions of faculty time as matching support for extramural contracts and grants than had been true in the past. It is also easier to provide staff support for nontraditional projects with personnel needs and time sequences not consistent with traditional calendars or faculty schedules. We can engage in "series staffing," rotating persons in and out of sponsored projects based on need and individual competence, with much greater ease than before. In general, it appears that this flexibility will make it more possible for us to present an image to external funding sources and other institutions which will promote cooperative activities and permit almost instantaneous response to programmatic needs.

A variety of annual (9-month) contractual faculty arrangements is shown in figure 3. The hours within each block are standard college hours.

Faculty Development

The implementation of faculty development programs has become increasingly urgent as growth comes to an end, faculty mobility diminishes, and departments and colleges become heavily overtenured. The new calendar reallocates time in a manner that will encourage activities contributing to maintenance and enhancement of teaching effectiveness. It also goes beyond this to provide resources to support more extensive activities for professional renewal. Time for these activities exists under traditional calendars in summer vacation periods but often is used for additional teaching for compensation rather than personal development. As a consequence of the flexibility in faculty assignment created by the new calendar, as well as the agreement by the faculty to accept lower salary levels for additional teaching, the university has been able to create a yearly fund of $200,000 for development purposes. Part of this fund has been used to support faculty research performed outside the regular contractual period. A portion is allocated to each college for use under university guidelines for supporting extensive efforts in curriculum development, institutional service, institutes, in-service programs, and professional improvement activities. The balance of the fund is used to support university-wide and inter-college programs, one of which is the establishment of a faculty college in which faculty offer short courses to their colleagues.

Calendar Evaluation

A calendar evaluation is being conducted under the supervision of a committee comprised of administrators, students, and faculty with expertise in testing and evaluation The committee will review a final report in the early spring of 1977 which will be distributed to the entire faculty prior to the referendum scheduled for later that semester. The report will indicate the results of the extensive evaluation program now underway that includes (1) pre- and post-test administration of nationally normed instruments (the Institutional Functioning Inventory and the Institutional Goals Inventory) and a locally constructed instrument; (2) reports of enrollments, grades, and so on, (3) analyses of student, faculty and administrative reactions to various aspects of the new program collected by means of short, 5-item questionnaires completed by university participants immediately after a term or activity is over. These short questionnaires, or "Mini-Q's," have been completed at registration and at the completion of each of the modular terms. A sample of one of the Mini-Q instruments (requesting the reactions of the faculty finishing 7-week courses) is shown in figure 4.

Information collected through these instruments is reviewed immediately by the calendar evaluation committee. The committee has recommended that these data not be released to the university community until its final report is prepared so that later data are not influenced. Several colleges and other academic units are also conducting evaluative programs supplementing the university effort. For example, the College of Nursing will be comparing student academic achievement in 7- and 14-week versions of the same course this spring to

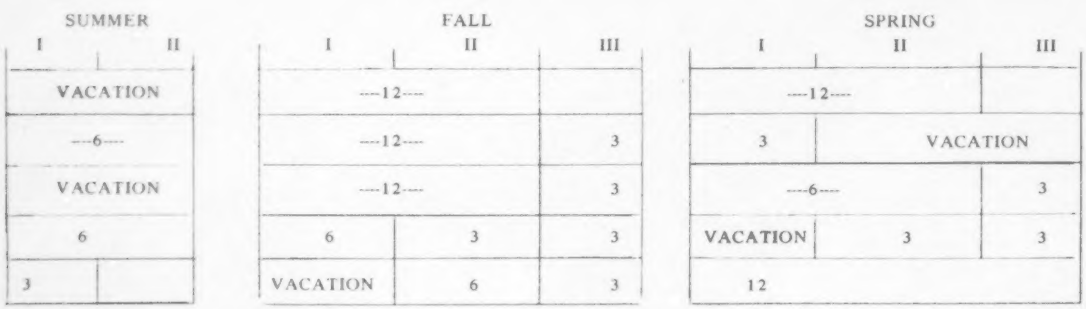

Figure 3. Faculty assignment schedules.

FACULTY REACTIONS	STRONGLY AGREE	AGREE	NEUTRAL OR NO OPINION	DISAGREE	STRONGLY DISAGREE
1. This 7-week course allowed the student more time to concentrate on the subject than a traditional semester length course.	☐	☐	☐	☐	☐
2. The faculty workload (reviewing assignments, tests, etc.) required in this class was excessive for the 7-week period.	☐	☐	☐	☐	☐
3. The material intended for this course was adequately covered in 7 weeks.	☐	☐	☐	☐	☐
4. I was satisfied enough with this 7-week course that I would like to teach another 7-week course.	☐	☐	☐	☐	☐

5. Assuming this course was equally available in a 7-week term or a 14-week semester, which would you prefer? ("X" only one):

☐ 7 week only ☐ 14 week only ☐ Either 7 week or 14 week

6. Other Comments: _____

Figure 4. Sample seven-week faculty Mini-Q.

determine the effects of different time periods upon learning.

The Office of Planning and Institutional Research has major operational responsibility for implementing the evaluation component. The objectives of the evaluation process are

1. To assess changes in campus activities, climate, and attitudes of students, faculty, administrators, and the local community as a result of calendar implementation

2. To measure the attitudes toward unique instructional formats, teaching strategies, and autotechnologies of students and faculty who have been directly affected by calendar reform activities

3. To evaluate the effectiveness of calendar activities in meeting specific student interest groups' needs, for example, part-time adult learners, commuting students, "dropin" or "dropout" students, ethnic minorities, veterans, and so on

4. To assess the affective responses of faculty to the faculty development program that involves compensation for additional service for curriculum development, research, and in-service training.

Any change in a complex system provokes unanticipated consequences and problems. Given the magnitude of the changes at the university, it is surprising not that problems exist but that the problems are relatively few in number and can be rationally resolved. This provides additional evidence of the unusual administrative skills of large numbers of persons, but, more significantly, reflects upon the committed efforts of faculty—some of whom do not favor the new calendar—in working toward its success.

The first year of a 2-year experimental program is completed. Much more experience and careful evaluation will be necessary to determine if the benefits to students, faculty, and public are worth the costs that have been and will continue to be paid. Those costs are not fiscal ones. Indeed, the total budget demand of the university (excluding salary increases) is less than in previous years. Rather, the costs are those of increased demand on the energies and commitment of the faculty, of the anxiety and discontinuity that attends any large organizational revision, and of the uncertainty as to the eventual success of so many new academic approaches introduced in so short a time.

Whatever final form the Oshkosh calendar plan may take, it has already altered an entire concept of time, restructured and revitalized professional development, and created an administrative system that is unique in the nation. And the calendar has opened new and vigorous educational alternatives to students who must be the ultimate beneficiaries.

(The final outcomes of the Oshkosh calendar will be presented at the 1977 AIR Forum.)

FUNCTIONAL TENSIONS IN THE UNIVERSITY

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Traditionally, the functions of the university have been described as teaching and research. In the standard formulation, the university is stated to be an institution committed to the pursuit and communication of knowledge through teaching and research. However, contemporary developments in the university challenge the continued adequacy of analyzing its functions in this way.

With the appearance of external degree programs and certification of life experiences, the place of teaching in higher education is no longer clear. Even in institutions that follow more traditional procedures, the importance of teaching is suspect when the positions of top academic status are awarded largely on the basis of performance in research and when the occupants of such positions are required to do little teaching, and, perhaps then, only in graduate seminars that demand no special preparation. This anomaly, that the more successful a university teacher is the less teaching is required, is replicated by another anomaly, that the students who are most difficult to teach, the undergraduates, are assigned to the least experienced teachers, the teaching assistants. On the other hand, the importance of research is challenged by the existence in the university of academic departments that cater almost exclusively to certification needs. The role of research is also made questionable when, in response to budgetary constraints, faculty productivity is measured by the student credit hours a course generates. Marketability, rather than scholarly advancement, then, becomes the criterion for faculty retention and program development. Also, the triviality of some published research makes it difficult to claim this as a function of the university.

A different challenge to the traditional functions of the university is posed by some suggested reforms, especially those that were heard during the years of student unrest in the late 60s and early 70s and that reappear whenever there is reason to notice the university's scholarly isolation and neutrality. Demands that the university become politically active, protect the rights of its various constituencies, and become a place for the formation of community are demands for university to address itself to functions that go beyond teaching and research.

These challenges to the traditional functions suggest the timeliness of returning to the question of the functions of the university. Until that question is settled, evaluations of current developments lack a firm anchor. Holding to the traditional functions of teaching and research can either prevent the university from investigating innovative futures or protect it from meretricious solutions to its current problems. What is the obligation of faculty to teach courses that are limited in scope and pedestrian in sophistication? At what point does marketability become dysfunctional as a criterion for either research or teaching? Should research dominate the work of the university and should the task of advancing the populace to levels of learning beyond literarcy increasingly be relegated to the community colleges? A necessary step in answering these and like questions involves determining the functions of the university.

Functional Analysis of the University

Analyzing the functions of an institution involves explaining the contributions that its recurring activities make to the development or maintenance of the system within which the institution operates. In explaining the logical characteristics of functional analysis, Carl G. Hempel (1959) states, "functional analysis seeks to understand a behavior pattern or a sociocultural institution by determining the role it plays in keeping the given system in proper working order or maintaining it as a going concern" (p. 278). A functional analysis, thus, examines three different items: a set of activities, a system within which the activities take place, and some need of the system, satisfied by the activities in question, so that the system remains in adequate, effective, or proper working order. Hence, the question, What are the functions of the university?, is incomplete and cannot be answered in that form. The functions are relative to some system within which the activities of the university have effects. Thus, before doing a functional analysis, a system within which the university operates must be specified.

The two most likely candidates for the systemic location of the university are the life experience of an individual and the supporting society. But, both of these choices seem to render a functional analysis of the university inescapably arbitrary since an individual or a society can present a great variety of needs to be satisfied by the activities of the university. For an individual, the university can function as a source of entertainment, as a place to take walks, or as a dating bureau. For a society, the university can function as a sorting device for the allocation of social roles or as an instrument for raising property values in a particular locale. Clearly, given the proper circumstances, both individuals and society can discover functions in the activities of the university that seem quite peculiar and extraneous to its work. But, the very suggestion that some functions attributed to the university might be peculiar and extraneous suggests that a functional analysis is not completely arbitrary. The problem is to ground the analysis in such a way that the functions assigned to the university can be judged as more or less harmonious with its institutional character while at the same time recognizing that the university is an artificial creation without a natural teleology.

The Environment of the University

The environment the university needs for its activities and its suitability for certain activities will, if not strictly limit, at least discriminate among the func-

tions that an individual or a society assigns to the university. What, then, is the environment that makes possible the university's activities?

Among activities that recur are those classified as intellectual performances: explaining, proving, remembering, organizing, speculating, arguing, inquiring, and so forth. These are not the only activities, since the university also, among other things, owns property, houses students and purchases material goods. Nor are these activities unique to the university, since other institutions sponsor intellectual performances. Rather, the point here is that a university without intellectual activities is unthinkable. Hence, the environment necessary for the activities of the universsity must be one that, whatever else it does, makes possible intellectual performance.

Such an environment contains many features, among them the social institutions that favor reasoned discourse and a value system that associates intellectual activity with human excellence. But the fundamentally necessary condition for intellectual activities is meaning. Intellectual activities are, first of all, symbol-using and making processes; the symbols stand for something other than themselves and, in that sense, have meaning. The dependency of intellectual activities on symbolization, thus, makes meaning a necessary environment at least for these activities of the university.

A second way in which meaning is necessary for the university derives from understanding "meaning" as that which is significant. According to one account, meaning has been grasped when it is understood as related to other things as a part of the system as a whole (Ogden and Richards, 1946). The activities of explaining, demonstrating, organizing, and inquiring relate to meaning, in this sense, because they seek to attribute meaning to something, or presuppose that something has meaning because of its consequences within a particular system. In both these ways, the university depends on meaning much as economic institutions depend on the exchange of goods and political institutions on the exercise of authority.

This dependence on meaning is implied in referring to the university as a cultural institution. One way of understanding culture is to view it as a system of meaning. This is the approach that Talcott Parsons (1973) took in his general theory of action: "Culture consists in codified systems of meaningful symbols and those aspects of action directly oriented to problems of the meaningfulness of such symbols" (p. 12). Other institutions deal with the problem of meaning, but the relationship of the university to meaning appears to differ from that of a church or theatre or museum. Determining this difference provides a basis for discriminating among the functions that can be assigned to the university, some functions relating to activities that are distinctive of the university vis-a-vis other cultural institutions.

The Distinguishing Activities of the University

The relationship of the university to meaning can be characterized in four different ways: the type of meaning on which the university focuses, the level at which the university approaches meaning, the manner in which the university pursues meaning, and what the university does with the meaning it attains.

The first of these, the type of meaning, is the usual basis for distinguishing the university from other cultural institutions. Thus, the university is said to pursue knowledge through empirical research, objective inquiry, or scientific investigation. But, not only does such a characterization preclude the university from pursuing forms of inquiry that are not strictly cognitive, it also confuses the contemporary version of the university with necessary features of the university as such. In the past, the university has sometimes served as "handmaiden to the church and conscience to the king," roles that may be eschewed by the contemporary American university simply because of its temporal location in a society that places a high premium on cognitive pursuits. Rationality happens to be important for productive and profitable economic activity, and the extension of knowledge generates new possibilities for rational action. If economic pursuits are important enough to a society for society to place a premium on competence, or, in other words, on the ability to make choices based on knowledge, then the cognitive dimension of culture will be the cultural component that receives the most emphasis. But, given a society in which religious orientations or moral concerns are dominant, the institutions of higher learning could well focus on cultural components other than scientific knowledge and propositions of cognitive significance.

This is an important point when evaluating suggested reforms of the university. If the present cognitive focus of the university is necessary to its identity as a cultural institution, then efforts to make it a therapeutic community or a moral force in society must be denied. As long as the university remains isolated from other cultural concerns by the commitment to cognitive pursuits, the responsibility devolves upon students for protesting the seriously objectionable practices of society and for shaping a personal environment which is congenial to human existence. But, if an institution of higher learning can pursue religious, moral, and expressive concerns, and still preserve its identity, and if a university can remain a university while embracing forms of inquiry that do not center on empirical research and scientific objectivity, then the university is free to explore a great many innovative futures. The present model of university work then becomes a temporal accident and not a logical necessity. However, this implies that the university cannot be distinguished from other cultural institutions by the type of meaning on which it focuses.

A more satisfactory way to distinguish the university from other cultural institutions is, first, by the level on which it approaches meaning. The description of the university as an institution of higher learning is an acknowledgement that only certain levels of meaning are interesting to it. The university pursues meanings that are important because they are strategically located within the general schemes that organize thought and inquiry, either completing or recasting the frames of reference within which anything becomes significant. In pursuing these meanings, the university expands the area of meaningful discourse and liberates inquiry from its present limitations. As a cultural institution, the university engages in activities that extend the very possibilities of meaning itself, and, in this way, the university promotes the developing history of meaning.

Secondly, the manner in which the university

pursues meaning further distinguishes it from other cultural institutions. The university seeks a compelling expression of meaning: compelling not because of the ritual surrounding it or the force of authority imposing it but because of the competence of the inquiry that generates it. To guarantee this competence, the university conducts the pursuit of meaning as a public activity which is guided by the canons of inquiry established by the scholarly community. In this way, the university attempts to certify the meanings it expresses as being the result of the best available scholarship, and to that extent trustworthy.

A final distinguishing characteristic of the university as a cultural institution is its commitment to a widespread dissemination of those meanings which it has certified. In this the university differs from the research institute which, like the university, also extends and certifies meaning. However, no other institution of higher learning addresses as wide a public as the university—a public which includes those seeking either the substance or certification of advanced learning, those preparing for professional practice, those who will act as intellectuals in society, those who are responsible for governmental and corporate policies, and those who will work as scholars.

In short, the university is a teaching institution, even though it communicates meaning to the public in ways other than teaching. Also, not every act of communication has as its content those meanings of special interest to the university, since some preparation is needed before the meanings that have been recently certified can be apprehended. But, in widely communicating the meanings that it has secured and certified, the university distinguishes itself as a cultural institution that teaches.

The Cultural and Institutional Functions of the University

These characteristics of the university mark out its capabilities as a cultural institution. The university relates to meaning by extending, certifying, and communicating it. These are the distinguishing activities of the university that, along with the environment that makes them possible, place constraints on the functions assigned to the university by an individual or by a society. If the university is to continue the activities that distinguish it as a cultural institution, then the functional needs to which the university responds cannot be such as to inhibit the extension, certification, and communication of meaning. Admittedly, this is a very weak constraint because it rests on a hypothetical condition. Good reasons can be found to justify a society's support of an institution that relates to meaning as the university does. But there is little point in objecting to a functional assignment that results in altering the university's relation to meaning. No absolute need dictates that the university must maintain its distinguishing activities.

A better course of action is to use the distinctive capabilities of the university as a basis for discriminating among the functions assigned it. In general, the functional needs for which the university is a fit instrument of response are those that relate to cultural interests and concerns. Under certain conditions, the good operating condition of an individual or society depends on special attention to culture. For example, if the meaning accumulated by a society has become so vast that it stands in danger of being lost, then the need exists for devices that codify and organize meaning. Or, if traditional meanings are no longer serviceable in an individual's attempt to cope with the problems he or she faces, then a need exists for locating new meanings. But, whatever the conditions that generate a need for explicit attention to culture, the university constitutes a response to the problem of institutionalizing cultural interests and concerns and articulating these into the life of an individual and into society. This might be called the cultural function of the university, since, in responding to the need for the extension, certification, and communication of meaning, the university is identified as a type of cultural institution.

Other functional requirements relating to cultural interests and concerns are satisfied by the university not so much because it is a cultural institution as because it is an institution. The need for the extension, certification, and communication of meaning could be satisfied in a variety of ways, but an efficient arrangement of doing this is provided by the institutional form of the university. Ministering to the cultural needs of society or individuals does not in itself provide the material resources that make possible either the accomplishment of this task or the sustenance of those who engaged in it. The people who work on the problems of meaning have their own needs for material comfort and social status. Moreover, their work is facilitated by arrangements that bring them in contact with others who are similarly engaged. They also stand in need of institutional protection since their work may not be immediately productive and may produce results that are disturbing to society. The institutional form of the university addresses all of these problems. It provides a setting in which scholars find occupational roles, social status, material support for their work, access to colleagues, and protection for work that will bear either distant or controversial fruit. Making all this possible might be called the institutional function of the university. In performing this function, the university also addresses cultural interests and concerns, but indirectly, by providing the arrangements that facilitate the pursuit of meaning.

Functional Tension in the University

Some of the contemporary tensions in the university and anomalies in its practices can be explained by the interplay of the cultural and institutional functions. Some of its activities contribute to both these functions. Teaching, for example, is a way of communicating meaning and also a way of commanding the material resources needed by the university. As a basis for charging tuition and demanding public subsidy, teaching contributes to the university's institutional function. But, as a way of communicating meaning, teaching shares in the cultural identity of the university. Research has the same dual personality. On the one hand, research is the extension and certification of meaning, hence a cultural pursuit. On the other hand, research that addresses particular social, economic, or political concerns provides a basis for requesting material support for the researcher and the university. The schizophrenic character of teaching and research makes them inadequate expressions of the university functions. Rather, the university has both a cultural and an institutional

function to each of which teaching and research contribute. Tension arises when teaching and research, seemingly properly located for the integrity of the university in its cultural function, conflict with teaching and research located for greatest servicability to the university's survival in its institutional function. In each of these locations, different criteria are used to evaluate teaching and research. As related to the pursuit of meaning, the judgment focuses on what these activities are in themselves. But, as related to the acquisition of material resources, the judgment bears on how well these activities fulfill the instrumental purposes to which they are subordinated.

This functional tension is not easily resolved. The distinctive identity of the university as a cultural institution depends on the contribution that teaching and research make to the cultural function. Moreover, the intrinsic worth of teaching and research is most completely realized when these activities participate in the cultural function of the university. Research is most free and teaching most educational when not dominated by extrinsic purposes but focused on the pursuit of meaning. And, yet, while a world is imaginable in which the university would not have to rely on research and teaching to obtain material support and in which neither individuals nor society would subvert these activities to strictly utilitarian purposes, that world is not a realistic possibility. The most persuasive reason the university has to justify its demands for material support is its service to those cultural concerns that are keenly felt by individuals and society. Research can be very useful, and often is most apparently useful, when it does not generate the kind of meaning that is of primary interest to the university. Likewise, teaching consisting mostly of passing on information and training in skills is easily defended because of its usefulness to a variety of individual and societal needs, even though such teaching does not communicate the kind of meaning the university explores in its cultural function. When contributing to the institutional function of the university, the standards used to judge teaching and research are those that measure its marketability. Good research, no matter how trivial, is research that is published or that leads to grants and consultantships. Good teaching is teaching that produces consumer satisfaction or that generates a high number of student credit hours. Thus, the institutional function of the university emphasizes those varieties of teaching and research that are clearly seen by individuals and society to be of use to their own purposes.

Response to Functional Tension

There are two ways to deal with this functional tension in the university: First, it can be dissolved either by eliminating one of the functions or by making performance so effortless that its demands are no longer problematic; secondly, failing that, it can cope with the tension by balancing off the demands posed by each function.

Dissolving the functional tension by eliminating the cultural function of the university is not a viable option, since fulfilling that function gives the university its distinguishing identity as a cultural institution. Moreover, the problems involved in performing this function do not, at the moment, seem to be derived from intellectual stagnation. Given the proper resources, the cultural life of the present-day American university seems vital enough. Thus, dissolving the functional tension in the university seems to be a task focused on the institutional function. Here again it does not seem opportune to eliminate this function, since the institutional form of the university still seems serviceable as an aid to extending, certifying, and communicating meaning. Hence, the only realistic possibility for dissolving functional tension in the university is to render performance of the institutional function effortless. In fact, this is one way of describing the good administrator: he or she is a person who so successfully addresses the institutional function of the university that such is never perceived as problematic and never challenges the cultural function. But recalcitrant governmental bodies and a public interested in a return on its investment in higher education make it unlikely that very many administrators will be successful in this way.

Thus, coping with functional tension appears to be the prospect that faces most of those involved in university work. Coping, first of all, means recognizing that the characteristic activities of the university address more than one functional requirement. Coping further entails adjudicating among the demands of the cultural and institutional functions so that neither is seriously neglected. None of this promises to be an easy task, especially since the teaching faculty and the administration assume primary responsibility for different functions: the faculty, for the cultural function; the administration, for the institutional function. Coping with functional tension often comes to mean the faculty and the administration coping with each other.

As a final note to this analysis, let us consider some of the instances in which functional tension currently appears in the university. There is, first, the anomaly mentioned at the outset—that the more successful a teacher becomes, the less teaching is required. There is, as well, the reluctance of established faculty to meet with large classes of undergraduates. Both of these can be justified as appropriate responses to the cultural function of the university. Not all teaching sponsored by the university addresses the cultural function. Some courses are strictly utilitarian in their purposes: the students are purchasing credits as an investment in later social benefits, and the teacher is justifying the budget allotted to the department. To those who have achieved eminence in extending and certifying meaning, teaching such courses may, indeed, seem like an abdication of their professional calling.

Even though the cultural function can be used to justify neglect of some forms of teaching, this argument must be qualified in two ways. First, the cultural function of the university can also be used to criticize professors whose scholarly work is hurt by neglect of teaching. This criticism looks at teaching in much the same way as Thorstein Veblen (1957) who wrote, "The work of teaching properly belongs in the university only because and in so far as it incites and facilitates the university man's work of inquiry" (p. 12). Secondly, under present circumstances, no professor has a right to completely ignore the institutional function of the university, especially when such a person is a very expensive faculty member. However, teaching large undergraduate classes is not the only way in

which the obligation to participate in the institutional function can be met. The professor might also be able to secure independent funding for research, or the fame of the professor's work might be a valuable visual aid in the administration's appeal for alumni support. The point here is that, though at times neglect of teaching can be justified, it is still incumbent upon a faculty member to contribute in some way to the university's institutional function.

A further note here is that the creation of community colleges softens this conflict between the cultural and the institutional function. With alternate forms of postsecondary education available to high school graduates, the university is freer to concentrate on that style of teaching which is congenial to its cultural function. This further differentiation of postsecondary education allows the university to define more narrowly the type of meaning it wishes to communicate and, thus, to identify more completely its teaching activities with the cultural function.

A second area in which there is need to cope with functional tension is the research sponsored by the university. Some research is profitable for the university even though it does not advance the history of meaning. Selecting research on the basis of its monetary return runs the risk of neglecting important forms of inquiry which do not promise financial gain. If government and industry are able to command the time and energies of the scholarly community, the account of meaning offered by the university is likely to be skewed by political and economic utility. In that case, the cultural function suffers because of solicitude for the institutional function. The matter is even more serious when it is the individual professor, rather than the university, who profits from timely research that generates remunerative consultantships. Such a professor uses the office at the university to conduct a personal campaign for improved social and financial status but addresses neither the cultural nor the institutional function of the university.

The tension between the cultural and the institutional function will most certainly endure. Various and in some ways incompatible demands will be placed on the activities of teaching and research. The line between justifiable emphasis on one function and neglect of the other is difficult to trace. The responsibility for marking that line belongs to all who work in the university. In response to urging by the administration to pursue grants and to devise marketable programs of instruction, and, in the face of attractive enticements from the business and political communities, the individual scholar is responsible for protecting the cultural function from the encroachment of other interests. The extension, certification, and communication of meaning must take place according to its own logic. Likewise, faced with the propensity of the faculty to luxuriate in the groves of academe, the administration must insist that the institutional function is also proper to the work of the university. The cultural interests of individuals and society must be attended to by the scholarly community. Tension in the university is much like tension in human life: it can be a creative impulse or it can lead to neurosis. If the history of the American university is any indication, this functional tension has been beneficial. The demands of the institutional function have kept the university flexible, and the demands of the cultural function have kept it solid. It appears that addressing both of these functions is for the university a creative response to tension.

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ACADEMIC PLANNING AND INSTITUTIONAL RESEARCH– CONFLICT OR COOPERATION?

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The basic conflict which exists between what passes for academic program planning in colleges and universities and institutional research as it has evolved is a conflict between the value orientation of the leadership of higher education and that of the political forces which control the institutions of higher education. It is not my intention here to examine the essential goodness or badness–the rightness or wrongness–of the differences which create the conflict, but instead to identify examples of the conflict and the consequences of operating under either set of values. Identifying and subsequently posing consequences should disclose specific activities that create conflicts between academic planning and institutional research.

At the outset one must realize that institutional research is, in the minds of the great majority of faculty, synonymous with operations research, scientific management, and the current application of cost-benefit analysis methodologies to the educational enterprise. Consequently, the output of institutional research is often tainted because of the powerful threat its findings pose to the academic programs it analyzes. In addition, there is the probability that individual university institutional research offices may be on the way out, having served their needs during a particular phase in the history of higher education.

A major portion of what was once institutional-level institutional research (which took the form of studies concerning space utilization, staffing, salaries, student attrition and achievement, enrollment projections and enrollment analyses) can now be accomplished efficiently by the central offices of state coordinating agencies and integrated management information systems. Thus, we come to the first basic conflict issue.

Duplication of Basic Institutional Research Studies

What justification is there for devoting institutional resources to the gathering, filing, analysis, and reporting of data which can be accomplished by the management information system of the state coordinating agency? To some, the use of substantial institutional resources may seem an unnecessary duplication of studies done by a state agency. Conflict may erupt as the institution points out that data reported by the state agency are not accurate, have been improperly interpreted, or are not reported quickly enough to be useful for internal institutional academic planning. Faculty may claim that, since these studies are already being done by the state, the institution need not devote institutional resources, which could be used for academic programs, for such prima facie duplication. This claim gains increasing validity when the faculty point out that they are not permitted to have programs which duplicate those of another department or college.

There are also other issues which divide the research and planning areas, and they are presented in the ensuing discussion.

Inadequate Enrollment Projections

The unresponsiveness of state institutional research agencies to local academic planning inputs such as enrollment projections is critical. In one situation, enrollment projections established at the state level for an institution, even in the light of very hard data from that institution, were nearly 1,000 FTE less than the institution's own projections. The state coordinating agency's projection was written into the appropriation bill, however, and the result was a loss of more than $3,000,000 in income for the institution over the 1975-77 biennium. The effect on academic planning was to require staffing with shortened resources, the overloading of some sections, and the limiting of offerings.

Classification of Subject Areas

Differences also arise in the classification of disciplines for purposes of monetary allocation and reporting. For example, the institution may classify its history department as one of the humanities. The conflict revolves around the question of who is best qualified to classify subject matter according to discipline–experienced academicians or less knowledgeable systems analysts.

Subsidies Per Student

State-conducted appropriation planning for all state universities, based on institutional research reports from individual institutions, does not provide supplemental funds to cover dramatic drops in enrollment in one or two institutions. Thus, supplemental funds for institutions in trouble are drawn from the finite pool available to all, instead of from special supplemental funds provided through the legislature for those in serious trouble. The conflict with institutional academic planning results because of the lower incomes provided to institutions having consistent increases in enrollment and the higher per student subsidies for institutions experiencing lower enrollments. In one state, institutions that had increases in enrollments over a 5-year period had to delay strengthening existing programs due to the diversion of $9,000,000 originally allocated to these institutions. The result was a serious conflict between institutional academic planning and institutional research at the state level regarding the proper methodology to be utilized in establishing subsidy allocations for individual institutions.

Staffing Discrepancies

Severe conflict often results within a university as academic planners work with the dean who wishes to retain all faculty positions in the face of declining

enrollments which now place his or her college in the overstaffed category according to recommendations provided by the state. The conflict, as viewed by the college, is between the necessity to maintain an essential critical mass of faculty and sustain program quality as opposed to adherence to a mechanistic staffing model.

Staffing discrepancies often exist between colleges within an institution. What justification can university decision makers use to continue to protect overstaffing in one college when, at the same time, another is understaffed by thirty or more? State institutional research models would suggest staff realignment. Academic planners might well plead for retention of a critical mass of faculty, even in mildly overstaffed areas, to protect against short-fall enrollment drops that will be reversed in three to five years. Engineering, mathematics and education are examples of academic areas which suffered enrollment losses from 1971 through the 1973-74 academic year. They were buffeted by staff reductions, only to see enrollment trends reversed in the 1974-75 and 1975-76 academic years. The reversal clearly justified increases in staff, but earlier decisions had already caused unfortunate losses in experienced faculty.

Priorities For Funding Programs

Management-oriented institutional research reports increasingly emphasize that job placement is the important criterion for academic program justification. In its internal budgeting, academic planning is tempted strongly to hammer at programs that are not job oriented and to justify continuance of "exotic," or what appear to be nonutilitarian, programs with arguments viewed by funding authorities as not creditable. The consequence is that science management technologies soar, and humanities and fine arts wither.

The Necessity to Quantify: The Systems Approach

There is increasing conflict resulting from the constant pressure to quantify or to apply mechanistic measures to activities, or products of activities, that defy standard quantification. The conflict is indentified eloquently by the consideration that

> in measuring things that can be counted or expressed in quantifiable terms, we are led unawares to the grand illusion that only the measurable really matters. In Wisconsin and North Carolina the logic of system has crashed the final barrier—the state colleges and universities are all merged into a new empire, a new total bureaucracy. . . . (Enarson, 1973)

Are we to be asked to quantify the effort and results of activity in the fine arts, the performing arts, and basic research? The academic planner says that there are activities which defy quantification and are to be valued not for their number but rather because "they ought to be." For example, no university can be a university without at least a minimum critical number of faculty and students in the classics, no matter how small the enrollments.

Territorial Rights of Academic Programs

What resolution is there to the conflicting territorial claims of two or more institutions seeking to serve the same population area with academic programs which separately have marginal justification but which could flourish as a single program for the population area? Academic planners at the institutions will claim the same area, but institutional research at the state level will say that there should be only one program.

Allocation of Graduate Assistants

Institutional research data may show that 90% of the student-credit-hour production of department *X* is generated by institutionally funded graduate assistants while 90% of the student-credit-hour production in department *Y* is the result of students who pay their own way. How does academic planning adjudicate the claim of department *Y* for more graduate assistants, clearly justified on the basis of uniform staffing models, when such an increase can be accomplished only by reallocating a number of graduate assistants from department *X*, a move that will sound the death knell of graduate work in department *X*?

Justification of New Programs

The institution may find that it has approval to offer, for example, a master's degree and, therefore, wishes to repackage existing course work in order to accomodate a new major that will serve a special target population. The college considers this only a new major. State authorities, however, consider it a new degree and require a full, institutional research systems analysis in order to proceed with approval. This generally takes over a year, during which time the student market that academic planning has sought to serve may have gone elsewhere.

Analysis and Cost-benefit Standards

The academic community sees constant analysis and cost-benefit standards applied to its operations by institutional researchers with very little, if any, applied to the support or maintenance services of the institution. Academic planners feel that, if as much attention were given to cost-benefit analysis studies in administration, new academic support services, and auxiliary enterprises as is focused on the cost-benefit achievement of academic programs, the possible reductions in cost associated with those areas could be made available to preserve academic programs.

Faculty Assignments for Non-Credit Instruction

Another type of conflict arises when it is found that additional faculty are justified for an existing academic program due to enrollment growth. For example, non-credit adult education overload activity of existing staff might amount to 2 FTE faculty. The question is whether new positions should be authorized as requested or whether activity of existing faculty should be reassigned to credit work. Institutional research studies show that greater income can be realized from credit courses than from non-credit. Academic planning would say that non-credit instruction builds valuable good will and serves the public service mission. But the question remains: Is public service non-credit instruction, which is not subsidized, to be staffed by faculty members who could be assigned to credit programs and thus maximize income?

The Industry Model

"What is good for the automobile production economy is good for higher education" expresses the ideology of some business-oriented management personnel at one institution who suggested that enrollments be restricted and academic programs reduced as a means to lower total costs of instruction. Some will remember the comment from Charles E. Wilson of General Motors who, while being interviewed by a congressional committee regarding his possible appointment as Secretary of Defense, was reported to have said that what was good for the country was good for General Motors, and vice versa. This application of the industry benefit theory as the model for decision making in higher education is increasingly prevalent.

Data developed by institutional research activity have influenced university finance officials at one university to argue to limit enrollment in order to reduce costs. Apparently these officials do not understand marginal costing. Academic program planning in the same institution demonstrates that increases in enrollment beyond subsidized enrollment projections can be managed with tuition income alone, and that maximizing enrollment must be accomplished to capture markets from competing institutions as well as to build an enrollment base from which to quality for larger, future subsidies.

Finance officials, using data supplied by institutional research, argue that since a reduction in the number of automobile models does not eliminate automobile purchases a reduction in the number of courses and programs will not reduce enrollments. Academic program planning says that it must continue to implement new program models in order to maintain and expand the university's share of the market. Finance officials using institutional research data opt for Henry Ford's Model T, while academic program planning urges a more diversified product line.

Summary

The conflict generated by the current use of institutional research-supplied studies will continue to sharpen the necessity for academic program planning to take the lead in focusing attention on the need to settle the basic issues of value orientation necessary in guiding the direction of higher education.

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ACTIVITY ANALYSIS OF GRADUATE MEDICAL EDUCATION

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Universities and associated health care institutions are under enormous pressure to improve the supply and distribution of appropriately trained physicians in spite of rapidly increasing financial constraints. Data concerning maldistribution of physicians among specialties have led to the consideration of governmental regulation of the number of physicians who will be trained in each specialty, regardless of the distribution of need for trainee services within the training institution. These conflicting pressures have focused attention on the costs of programs producing physicians, the associated outputs of the process, and on the inadequacy of institutional data bases for program and operational planning.

The graduate medical education programs in the five hospitals affiliated with Case Western Reserve University (CWRU) encompass 700 house staff (interns, residents, or house officers) with stipends totaling over $8 million, almost all of which is paid from hospital operating income. The faculty of the medical school have both educational program and patient care supervisory responsibility for these individuals. The interns and residents receive instruction from faculty and more senior house staff, teach medical students (pre-M.D.) and more junior house staff, deliver medical care to patients, occasionally engage in research, and perform some hospital administrative duties. In spite of the pressures discussed in the first paragraph, little data exist on how these individuals distribute their time among the roles of student, practitioner, teacher, and researcher.

This paper reports on research at CWRU aimed at investigating and comparing two alternative approaches to house staff activity measurement.

Measurement Problems

There are a number of problems inherent to the process of measuring mean activity profiles of house staff by specialty. They are due to the following characteristics:

1. The professional activities of house officers are complex, varied, and frequently overlapping. The latter means some activities are "joint", that is, they simultaneously produce more than one output, for example, education and patient service.

2. Interns and residents are often under extreme work pressure and are obligated to work uncommonly long hours. They may therefore have little time (and perhaps patience) for interruptions by analysts who want to collect activity data.

3. Like other professionals, they can be sensitive to the notion of having their activities measured, timed, and categorized.

4. Any obtrusive attempt to measure activity occurrence and duration may in itself alter the subject's normal pattern of activity.

Recognition of these problems has led us to attempt to adhere to the following protocols in the design of house staff activity measurement studies.

1. Some of the categories for classifying a house officer's time must be characterized by a joint nature. It is inappropriate to attempt to directly classify many activities in terms of pure output programs. If estimates are needed of effort devoted to pure output programs such as patient service and education, it is best to make the necessary arbitrary fracturing of joint activities after the data are collected, based on some uniform criteria for all house officers. This segregates the arbitary and controversial process (and its necessary assumptions) of splintering joint activities among output programs from the basic task of raw data collection.

2. The activity study must fit as much as possible into the schedules and normal work routines of the house staff, thereby causing minimal disruption.

3. The data must be utilized and released only in aggregate form to guarantee that they cannot be used in any punitive or comparative way on an individual basis.

Two Measurement Approaches

Questionnaire. The CWRU was a voluntary participant during 1974-75 in a study conducted by the Bureau of Health Resources Development[1] which utilized a house officer activity questionnaire as well as administration and analysis procedures developed by Technomics, Inc., a Washington, D.C. consulting firm with substantial experience in the field.[2] The total study involved attempting to administer the questionnaire to all house officers at 10 academic medical centers (medical schools plus their associated owned or affiliated teaching hospitals) and at 7 teaching hospitals not affiliated with medical schools. Out of the total of 16 specialties selected for coverage in the national Bureau of Health Resources Development study, fifteen were included in the CWRU survey. They are listed in Table 1.

The questionnaire administration protocol at CWRU called for randomly dividing the house staff into approximately three equally sized groups. The first group was administered the questionnaire in May 1974, the second in September 1974, and the third in January 1975. Since the questionnaire covered the immediately preceding 'thirty days' activity, only those individuals who had been on a single service during that period were solicited. Five hundred seventy-four of the approximately 700 house officers in the system were deemed eligible during the course of the study. For each of the three administrations of the questionnaire, several times and locations were established at each of the five affiliated hospitals and the house officers requested to come to the one most convenient for them. They were solicited by an individually addressed letter from the

Table 1

Medical Specialties on Which Activity Data Were Collected

anesthesiology
dermatology
general surgery
internal medicine
neurology
neurosurgery
obstetrics and gynecology
ophthalmology
orthopedic surgery
otolaryngology
pathology
pediatrics
psychiatry
radiology
urology

hospital chief of staff that included a pre-addressed card on which they were asked to check the questionnaire session they planned to attend. Those who did not return their cards were contacted by telephone. This rather rigorous solicitation and follow-up procedure resulted in 425 house officers completing questionnaires at CWRU, a response rate of 74 percent. In the total national study, the mean response rate was 58 percent. The logistical and operational effort associated with the administration of the questionnaires at CWRU required about five man-months of staff time. In addition, Technomics, Inc. had two or three people on site for each of the three questionnaire administrations.

The questionnaire was designed around detailed task inventories of from 400 to 600 items tailored to the specialty in which the house officer was taking his or her training. These task inventories were developed by Technomics over a period of many years for use with a wide range of levels of health care personnel. The house officer task inventories that were used were evolved in consultation with representatives of the various specialty boards and advisory groups of house officers. As an illustration of the character of the task inventories, Table 2 lists a few of the tasks from the radiology set.

For each task, the house officer was asked a series of six questions covering whether the task was performed in the last month, and, if so, how long it took, how many times it was done, and whether any direct education was taking place during its performance. The Task Response Guide, which poses these questions, is reproduced in Exhibit 1. Naturally, extensive instructions and definitions were also included in the questionnaire booklet. The house officers' responses were recorded on precoded sheets set up for automatic reading by an optical scanner.

For each speciality analyzed by Technomics, the task times were aggregated into program-oriented activity distributions by using algorithms and computer programs developed in consultation with the Bureau of Health Resources Development and advisory committees representing each medical specialty.

Work Sampling. Since extensive use was expected to be made of the questionnaire data at CWRU, it was felt critical, in getting acceptance of the results, to attempt to validate the method by some form of direct observation approach which would not rely on individuals' memories or on self-reporting by the house officers. To this end, a work sampling approach was devised which utilized as officers persons familiar with the hospital setting (student nurses), and well-known, statistically based time-sampling procedures. At the largest of the five teaching hospitals affiliated with CWRU, three large specialties were chosen in which to carry out the verification study. The assumption was made that, if the questionnaire results were confirmed in those specialties at the hospital, the questionnaire would be usable throughout.

For purposes of the work sampling, 11 observation categories were chosen into which the observer could readily, and without ambiguity, classify the house officer's activity. The categories are listed and defined in Exhibit 2.

Table 2

Selected Subset of Radiology Task Inventory

1.	Give direct supervision to medical students, junior house staff
2.	Provide specialty consult
3.	Participate in teaching rounds
4.	Attend grand rounds
5.	Present case at grand rounds
6.	Prepare for case presentation (for rounds or special topic conferences)
7.	Observe work rounds
8.	Observe minor surgical procedure
9.	Observe major surgical procedure
10.	Read/review medical literature
11.	Write reports for classes/conferences
12.	Teach formal classes
13.	Counsel/instruct family in care of patient
14.	Collect blood by venipuncture
15.	Take routine x-rays (chest, abdomen, skull, long bones, and spine)
16.	Interpret batch of routine x-rays
17.	Take/interpret bronchogram
18.	Take/interpret angiocardiogram

Note. Extracted from A Task Inventory Booklet, a questionnaire developed for departments of radiology by Technomics, Inc., 1974. Used by permission.

The observers recorded the house officer's activities at randomly preselected instants in time by recording the appropriate activity numbers on a tally sheet such as that displayed in Exhibit 3. The observation times were randomly selected by the study team and checked on the observer's tally sheet before observation started. Instantaneous observations were made at the rate of approximately 12 per hour.

In total, 48 house officers were observed for a period of one week each over an elapsed time of one month (January 1975). Observing was scheduled on a 24-hour per day, 7-day per week basis covering all times the house officer was in the hospital. There were 29 observers utilized for the study and 3,840 hours of

IF YOU DID NOT PERFORM THE TASK WITHIN THE LAST MONTH, FILL IN COLUMN A, AND GO TO THE NEXT STATEMENT. IF YOU PERFORMED THE TASK WITHIN THE LAST MONTH FILL IN COLUMNS B THROUGH F. DO NOT LEAVE BLANK ANSWERS EXCEPT IN COLUMN F WHEN INDICATED

A	B		D	E	F
			THE LAST TIME YOU PERFORMED THE TASK:		
PERFORMED LAST MONTH?	DURATION OF SINGLE PERFORMANCE LAST TIME PERFORMED	FREQUENCY – NUMBER OF TIMES PERFORMED LAST MONTH	TASK WAS	WERE YOU ALSO DEMONSTRATING OR EXPLAINING TASK TO STUDENTS?	WAS TASK TOTALLY OR PARTIALLY REPEATED BY MORE SENIOR STAFF?
If NO, fill in space If YES, leave blank	1 = 1 MINUTES OR LESS 2 = 2-5 MINUTES 3 = 6-10 MINUTES 4 = 11-20 MINUTES 5 = 21-60 MINUTES 6 = 61-120 MINUTES 7 = OVER 2 HOURS	1 = LESS THAN 5 2 = 5-20 3 = 21-50 4 = 51-100 5 = MORE THAN 100	0 = PERFORMED WITHOUT DIRECT SUPERVISION 1 = DIRECTLY SUPERVISED BY A SENIOR HOUSE OFFICER 2 = DIRECTLY SUPERVISED BY A CLINICAL FACULTY MEMBER	0 = NO 1 = YES	If YES, fill in space If NO, or not applicable, leave blank

Note. Extracted from A Task Inventory Booklet, a questionnaire developed by Technomics, Inc., 1974. Used by permission.

Exhibit 1. Task Response Guide

house officer time monitored. Total staff time required for the study amounted to about four man-months. An additional 22 man-months of observer time was utilized.

Results and Conclusions

In order to map the hundreds of questionnaire activity tasks onto the work sampling results for comparison purposes, four major categories of effort were defined. They are as follows:

1. Patient-centered functions
   a) house officer alone
   b) house officer in an educational group (for example, faculty or any other health science students)
2. Seminars, meetings and conferences
3. Independent study, research and miscellaneous other duties.

In addition, it was necessary to exclude the work sampling categories, "on call but inactive" and "personal time", from the comparison because they were not accounted for in the questionnaire.

Compatibility of the task analysis questionnaire and work-sampling-observed results were tested using a three-way analysis of variance structured essentially as shown in Table 3.

The analysis of variance had four levels of factor A (activity category), two levels of factor B (methodology) and three levels of factor C (specialty). Hours-per-month data were used in the analysis with seven replications (data on seven different individuals) in each of 24 cells. The effect of most interest in the analysis was the interaction between method and activity category (AB). Significance here would have meant that the two methods did not agree in their estimates of mean time distribution over activities. The mean-square ratio of the interaction effect (AB) was 1.8, which is well below the critical ($\alpha = .05$) F-ratio of 2.7 for 3/144 degree of freedom. The conclusion that can be drawn here is that the task analysis questionnaire yields aggregate effort distribution data that is consistent with

Patient-centered functions: (normally in wards, radiology, pathology, lab, ER, OR, etc.; includes all writing and reading of patient's record and lab results)

1. With patient in educational group[1]
2. With patient w/o educational group
3. Not with patient but in educational group
4. Not with patient and w/o educational group

Communication-centered functions:

5. Reading or writing (other than direct patient-related material, such as the patient record or lab requests), phone conversations, talking to other than direct patient care personnel
6. Educational or administrative meetings, seminars, teaching and grand rounds
7. Professional activities away from university hospitals

Research-centered functions:

8. Research assignment activities

Other:

9. On call in university hospitals but inactive
10. In transit within hospital
11. All other (relaxation, meals, personal, etc.)[2]

[1]Educational group is defined as being with faculty or any other health science students.
[2]On call but not on active duty is category 9

Exhibit 2. Work Sampling Activity Categories

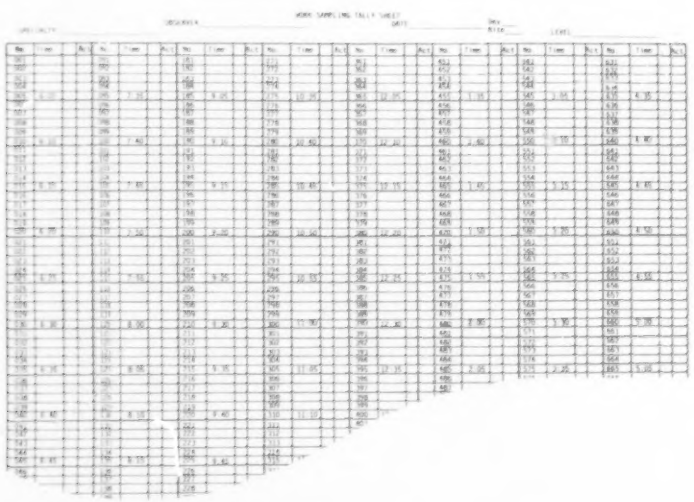

Exhibit 3. Work Sampling Tally Sheet

Table 3

Observed Versus Questionnaire Data Summary

Factor A: Activity		Factor C: Specialty	Factor B: Method — Work sampling: First specialty	Work sampling: Second specialty	Work sampling: Third specialty	Task analysis questionnaire: First specialty	Task analysis questionnaire: Second specialty	Task analysis questionnaire: Third specialty
Patient-centered functions	House officer alone		111[a] / 37[b]	132 / 44	98 / 45	165 / 44	169 / 40	127 / 46
	House officer in an educational group		126 / 42	141 / 47	102 / 47	139 / 37	203 / 48	116 / 42
	Seminars, conferences		36 / 12	12 / 4	4 / 2	22 / 6	9 / 2	3 / 1
	Independent study, research, and miscellaneous duties		27 / 9	15 / 5	13 / 6	49 / 13	42 / 10	30 / 11
	Total hours[c]		300	300	217	375	423	276

[a] Mean hours per month.

[b] Percent effort.

[c] Excludes on-call but inactive personal time in the hospital which was not asked for in the task questionnaire but was recorded in the work sampling study. The work sampling observers recorded mean times of 63 hours for the first specialty, 136 hours for the second specialty, and 85 hours for the third specialty.

data measured independently by observers using a work sampling approach.

Although the two measurement methods do yield compatible effort distribution information, the analysis of variance also indicates that the two methods are not in agreement as to total hours worked. This conclusion is clearly drawn from the mean-square ratio for factor B (method) of 9.4, which is well above the critical value 3.9 ($\alpha = .05$). Since it is assumed that the hours recorded by the work sampling observers are reasonably accurate, it is apparent that for the three specialties tested, the questionnaire yields hour estimates which are uniformly biased high by about (375+423+276)/(300+300+217) = 1.3, or 30 percent. This would not be a serious obstacle to using the questionnaire data for studies such as program costing which normally allocate resources to programs based on a percent effort profile. In these applications, consistent hour bias (high or low) will not affect the results.

For planning studies, such as determining the number of house officers required to satisfy patient service, teaching or learning demands, accurate activity profiles in terms of actual hours are needed. The analysis reported here would indicate that accurate hour profiles could be obtained either by work sampling using observers or by using the questionnaire results after applying a uniform adjustment to the hour figures. At CWRU, since a comprehensive work sampling study would be expensive, and since the questionnaire data is available, the more economical alternative would probably be to obtain estimates of actual total hours worked in each specialty from hospital records or from observers and adjust the questionnaire hour estimates uniformly across the activity profiles as appropriate for each specialty.

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Footnote.

[1]Now the Bureau of Health Manpower, Health Resources Administration, HEW. *Distribution of house officer effort-demonstration of a methodology* (final report), Technomics, Inc., April 1976. Report sponsored by Division of Medicine, Bureau of Health Manpower, Health Resources Administration, Department of Health, Education and Welfare, Contact NO 1-PE-34076.

[2]A detailed explanation of Technomics' "task inventory-based" approach to activity analysis of health personnel is documented in *A system approach to allied health education*, R. B. Parks, Ph.D., et al., Vol. 1-8, Copyright 1974 by Technomics, Inc.

CONFLICTING PRESSURES THAT IMPINGE UPON THE OPERATIONAL EFFECTIVENESS OF INSTITUTIONAL RESEARCHERS: CHALLENGES TO THE PRACTITIONER

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The purpose of this paper is to define institutional research, highlight several conflicting pressures that confront institutional researchers, outline a few organizational and operational causes of these pressures, and prescribe several potential cures.

To assist the reader in understanding my point of reference with regard to these topics, I have chosen to define institutional research as a process of identifying subject matter and research methodology followed by the collection, analysis, and reporting of information directed at facilitating policy formulation and decision making. This definition encompasses several of the commonly accepted dimensions of institutional research, including data collection derived from Dressel (1966), Rourke and Brooks (1966), plus analysis and reporting of information, cited by Saupe and Montgomery (1970), that is intended to aid in policy formulation and decision making as advanced by Russell (1965) and Suslow (1972). In addition, this definition recognizes that institutional research is an ongoing process requiring human and material resources. It also suggests that researchers play an active role in identifying the subject matter that will become their focus of attention. Finally, the definition indicates that research activities should result, whenever possible, in the specification of policy alternatives and decisions related to the accomplishment of objectives. However, this last point does not preclude the fact that some institutional research is designed to uncover problems and propose solutions.

Those in the institutional research profession, as well as those who supervise these personnel, know how difficult it is to function in the manner prescribed above. Institutional research is not an isolated process but rather a social one influenced by organizational and operational factors. This becomes evident when institutional research is examined in the context of institutional structure. Frequently, researchers are required to interact with personnel in higher, lower, and parallel positions: that is, with executive officers, deans and division heads, department chairpersons, administrative support staff, and faculty. These positions may have greater or lesser hierarchal advantages for asserting influence or pressure with regard to each other and the institutional researcher. Also, when institutional research is examined in the context of college and university operations, it becomes evident that researchers must integrate their roles with others in the organization. This is especially difficult to accomplish because of the nature of institutional research and the variety of different expectations about it held by members of the constituent bodies with whom researchers interact.

Conflicting Pressures that Restrict Effectiveness

Over the past nine years, I have filled different planning positions at three universities and studied several dozen more. During this time I have observed several conflicting pressures that restrict institutional researchers in their ability to enhance the program, budget, and facility planning and management responsibilities of decisions makers: that is, of executive officers, deans, support unit heads and department chairpersons.

Administrative need vs. management responsibility. One such pressure is created by institutional decision makers who must frequently exercise two different roles, namely, administrator and manager. Although the terms administration and management are frequently used interchangeably by educational writers and practitioners, they do not define synonymous roles. As Baughman (1969) pointed out, college and university administration ". . . is far more concerned with stewardship than management." He clarified this point by adding:

> This attitude toward administration . . . has strong precedence in terms of our medieval counterparts. Stewards were appointed to protect, distribute equitably, and keep records of loan funds, town contributions, and student fees . . . [in addition to keeping] track of students and their records, course offerings, rooms, etc. (p. 3)

Simply stated, the educational administrator role can be characterized by a concern for ongoing operational issues and decision information that addresses current crises or resolves pressing problems of an immediate nature.

The role of college and university manager, on the other hand, is generally characterized by activities that lead to the anticipation and exploitation of opportunities, instead of reactive problem solving. Drucker (1964, p. 5) emphasized this point when he wrote, "All one can hope to get by solving a problem is to restore normality." Given the present state of higher education, normality is not very desirable. Therefore, effective management requires the initiation of change through the establishment of structures and procedures designed to identify and achieve future goals and objectives. This can best be accomplished when the planning, organizing, motivating, and controlling functions of management are complemented by research studies resulting in useable management information.

By virtue of their technical competence, institutional researchers are capable of providing a variety of services to complement both the administrator and manager roles of decision makers. However, since the number of institutional personnel who exercise both these roles is frequently large and their needs varied, the demands for research assistance can be numerous. In

addition, since institutional constituents who exercise administrative and management functions hold varying degrees of status within the institution, they are able to employ influence and exert authority in varying degrees in their relationships with researchers. These circumstances often create conflicting pressures requiring researchers to establish priorities among assignments and activities related to operational problems, planning, and policy analysis.

Internal vs. external data reporting. The conflict between administrative need and management responsibility is compounded by a second pair of opposing pressures. One results from the information and data needs of other constituent groups internal to the institution, such as students, faculty, and governing board members. The other arises from enormous demands placed on researchers by representatives of external groups, such as coordinating councils, state and local government agencies, or accrediting agencies. Their needs result in requests for large amounts of institutional data to support budget, program, and capital facility requests, as well as research proposals and evaluation studies. These groups also request data that may be useful in addressing questions and issues relating to a number of special concerns or problems, such as affirmative action, tenure, faculty activity, and salaries.

The pressures exerted on institutional researchers by members of these internal and external groups are directly proportionate to their institutional or political authority and compound the organizational and operational problems experienced by researchers. For example, many external groups exercise considerable political influence over the operations of educational institutions through such activities as fiscal appropriations, institutional mission and program approval, and program evaluation. On the other hand, internal groups have a host of needs pertaining to the maintenance or furtherance of their special interests. Frequently, these needs relate directly to increasing their resources, expanding their programs, and self governance. From the institutional researcher's viewpoint, the information needs of these two groups are frequently at cross purposes, thereby compounding the researcher's dilemma regarding subject matter selection, use of research outcomes, and their relationships to administrative and management functions.

Research vs. data analysis. A third conflict confronting institutional researchers is between the roles of researcher and data analyst. Although these roles are not mutually exclusive, several distinctions do exist. The research function is typically characterized by such activities as (a) selecting subject matter, (b) identifying appropriate methodology, (c) undertaking or coordinating the study, and (d) reporting the finding(s) in a decision-making or policy-setting format. On the other hand, the data analysis function typically involves the review of enrollments, staff counts, financial conditions, facilities utilization, and inventory. Analysis of such data may include processing it into tables, charts, graphs, statistical treatment, integration, and interpretation. This role typically finds the data analyst responding to the subject matter requests of others who need data relating to pressing problems or issues.

From an operational viewpoint, these divergent expectations require that researchers clarify their opposing roles as initiators of information requests vs. reactors to such requests. The former role permits the researcher flexibility in subject matter selection, methodology, study coordination, reporting processes, and format designed to complement policy formulation and decision making. The latter role generally limits opportunities to perform these professional activities and demands clerk-like activities.

Organizational and Operational Problems

These conflicting pressures are perpetuated by several organizational and operational problems that are highlighted here. The organizational placement of institutional research is an issue about which much has been written and said. Although there are many different viewpoints on this issue, I recommend having institutional research staff report to the executive officer most responsible for institutional planning. By providing staff support to this line officer, whatever his or her title, researchers should be able to avoid channeling the major portion of their attention to issues that are administratively motivated and short-term problem oriented. This organizational placement can overcome several operational problems. For example, researchers can be relieved of some pressures to provide administrators with alternative solutions to current problems by being encouraged to anticipate problems before they occur and recommend ways they can be avoided. Instead of analyzing data to confirm what has happened, researchers can be encouraged to employ data to project alternative impacts of decisions before they are made. Instead of trying to design or implement planning and management-decision information systems in their spare time, researchers can be encouraged to keep pace with system development as a routine task. Instead of trying to devise ways to implement analytical tools and techniques with little or no thought given to their utility in planning and management decision making, researchers can be encouraged to grapple with such questions as, What will these tools and techniques do to improve planning and management? and Will such tools and techniques meet insitutional decision maker needs?

Although I recommend that instititutional researchers report to the line officer with planning responsibilities, I do not suggest that they limit their services to this one person. Due to the diverse programs and organizational complexities of colleges and universities, institutional planning officers must rely heavily on unit heads to initiate planning activities. Such activities can be encouraged by providing institutional research staff support to department chairpersons, deans, and division heads. Since many academic unit personnel lack the knowledge and skill to prepare plans that integrate program, financial, and facility resource needs, I have found them accepting of any help available. Institutional researchers can assist unit planners by providing them with planning and management information, identifying policy variables and suggesting alternative changes within the jurisdiction of unit decision authority and control, and if possible, utilizing simulation capabilities for the benefit of these decision makers.

Another operational problem that institutional researchers can help to alleviate, if they perform the roles I suggest, concerns their service to external agencies desiring planning, management, and accountability information. My experience has shown that while co-

ordinating commissions and government agencies are motivating many institutions to undertake work load, cost, and other studies, very few institutions have personnel who, through hands-on experience, are aware of the conceptual, operational, and utilitarian advantages and disadvantages of such studies. I feel that institutional researchers should acquire this experience and then be encouraged to provide technical assistance to external groups planning to initiate or revise such studies.

Challenges

The problems and conflicting pressures outlined above bring me to challenge institutional researchers to grapple continually, in the context of institutional planning and management, with key issues pertaining to their roles. Suggestions are given in this section which are intended to reduce the opposing pressures and increase the effectiveness of aid to decision makers.

First and foremost, institutional researchers should strive to exercise leadership. Leadership, as defined by Hemphill (1958) and supported by other organizational theorists, requires the initiation of structures and procedures to accomplish institution and unit goals and objectives. This definition of leadership, when placed in the context of institutional research as I defined it, should challenge researchers to select subject matter that is based on criteria directly relating to the management functions of decisions makers (i.e., planning, organizing, motivating, and controlling changes in the use of human and material resources to achieve institutional goals and objectives). I emphasize that management functions, not managers, are the major determinant of subject matter selection because my experience with college and university executive and middle managers indicates that many lack training or experience commensurate with the demands placed upon them. This dilemma requires that researchers exercise leadership by helping decision makers recognize and deal with management issues and needs by proposing specific studies relating to these concerns. According to Drucker (1964, p. 6), the challenge is "not how to do things right but, [more importantly] how to find the right things to do, and to concentrate resources and efforts on them."

Many institutional researchers can exercise leadership by effectively utilizing the organizational and operational mechanisms already available to them. For example, researchers generally have the flexibility to serve as staff support to a variety of institutional decision makers even though they may report to a line officer, typically the academic executive officer. The organizational placement of institutional research can provide numerous opportunities for interaction with decision makers at all levels within the institution if researchers seek out such interactions. In addition, their structural placement under an executive officer can provide a reason to refuse studies perceived as too wasteful of limited institutional research resources.

If organizational location is perceived as a structural or operational handicap to institutional researchers, then I challenge them to employ a new structure to increase their roles. In this regard the model used in the University of Utah is offered as an efficient and workable alternative that should be considered for the following reasons:

1. The institutional research function is housed in the Academic and Financial Planning Office (AFPO) which also provides staff support to planning and budgeting functions.

2. AFPO staff report to a director who in turn reports to a staff vice president. This relationship eliminates the possibility of institutional research activities being dominated solely by one executive officer with academic, budgeting, or administrative affairs reponsibilities.

3. Institutional research personnel have excellent access to the financial, personnel, student, course, and facilities data bases, some of which are under direct control of AFPO staff.

4. The registrar's office funds one AFPO position as support to institutional research. The incumbent conducts most student- and course-related studies, completes HEGIS and other reports, and prepares statistical summaries. This frees institutional research staff to undertake planning and management studies.

5. With direct access to budget personnel, the institutional research staff spend much of their time implementing planning and management systems, such as products of the National Center for Higher Education Management Systems (NCHEMS).

6. Institutional research has administrative responsibility for programmer-analyst personnel.

The nature of research itself is another factor enhancing leadership. Institutional research should be characterized by the constant search for subject matter and inquiry about institutional policies and issues. When research activities result in preparation of a set of alternatives which decision makers can review before initiating structures, procedures and actions, they are indicative of leadership acts. Researchers, to be effective, cannot be locked into routine operational tasks which recur periodically over time and consume major portions of their resources. If this is the case, then role incumbents are not doing research.

I do not suggest that institutional research personnel work in a vacuum when identifying management-related subject matter. Rather, I pose the challenge that they leave the confines of their offices to identify the change-oriented needs of decision makers. This strategy requires that researchers meet frequently with key decision makers, ask probing but not threatening questions, and employ listening skills which draw out the operational, analytical, and management concerns of these key persons.

By meeting with decision makers to discuss management concerns, researchers are setting the stage for another challenge I wish to pose: namely, to be hired as a consultant. This is possible only after decision makers have outlined their needs. Then researchers are able to select from among several needs the subject matter they perceive to be most worthy of study. They can then propose appropriate research methodology and discuss data display questions with decision makers. Implementing this strategy will permit researchers to play the active role in determining subject matter selection I referred to earlier, in addition to minimizing the possibility of being exploited as mere data analysts.

Institutional researchers are also challenged to enhance their consultant image by sharing the products of their efforts with appropriate institutional constituents. Many researchers do studies on, or require the participation of, institutional personnel (for example, faculty

activity analyses, cost studies, or analyses of grading practices). However, some researchers often neglect to share the results of their labors with members of these groups. Although reasons may exist to oppose the practice, sharing information and study results is an excellent way for researchers to display their talents and skills. Moreover, to be hired as a consultant by institutional decision makers, a goal every institutional research professional should strive to achieve, requires that he or she develop a reputation as an expert with saleable skills.

Another suggestion requires institutional research personnel to identify and provide staff support to key committees charged with formulating policy and evaluating performance. However, regardless of whether insitutional researchers consult with individuals or groups, they must question the need for studies whose relationship to one or more management functions is not clear.

The last point I wish to raise relates to the contributions institutional research staff members have made to their institutions and their constituents during the past year. How much of what has been done during this period related to administrative vs. management issues? Whose decisions were facilitated? How much time and effort was devoted to internal vs. external reporting of data or information? How much research vs. data analysis was undertaken? Finally, what can now be done to improve leadership performance of institutional researchers, even if that leadership remains anonymous?

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SOURCES OF CONFLICT BETWEEN INSTITUTIONAL RESEARCHERS AND DECISION MAKERS

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This paper is addressed to two questions concerning the relationship between decision makers and institutional researchers. First, what conditions contribute to conflict in the relationship? Second, what factors minimize conflict? Neither of these questions has received much attention in the institutional research literature, nor, for that matter, in the literature of public administration, organizational behavior, or business administration. This paper represents a first attempt to analyze such a relationship and its dynamics. The framework used for the analysis is based on Havelock's (1969) theory on the dissemination and utilization of knowledge.

Before proceeding further, two concepts require clarification. First, institutional research is that activity "dedicated to assisting the policy-formulation and decision-making processes of college or university governance" (Mason, 1971, p. 219). The institutional researcher, then, plays essentially the same role as policy analysts and operations researchers supporting decision makers in other types of organizations.

Second, conflict is inevitable in any organizational context and, in fact, not all conflict is detrimental to the organization. Coser (1956) distinguished between conflict as a means to an end and conflict as an end in itself. As a means to an end, conflict may actually facilitate decision making. Churchman and Schainblatt (1969) maintained that formalized adversary proceedings between decision makers and institutional researchers that are based on analytical principles can be used to generate more thorough evaluations of decision-making problems. As an end in itself, conflict can lead to interpersonal tension, a lack of communication, and deterioration in the effectiveness of the decision-making process. This paper is addressed to the reduction of the latter type of conflict.

Idealized Relationship Between Institutional Researcher and Decision Maker

An idealized working relationship between the institutional researcher and the decision maker is shown in diagram form in Figure 1. It portrays a reciprocal relationship which requires that effective interpersonal contact be established and that both sides strive continuously to understand each other's problem-solving perspective. For their part, decision makers must take the time to give whatever guidance they can on the problems they assign, be ready to provide clarification when necessary, and be able to appreciate the research and evaluation capabilities of institutional researchers. The institutional researcher must strive to understand the context in which the decision maker operates; to know his values, assumptions, and objectives; and to foresee the approach the decision maker himself might take in resolving the problem (Weiss, 1975). There are three additional points to be made about the institutional researcher/decision maker relationship.

First, the development of ongoing reciprocal relationships goes beyond the point of improving individual decision-making episodes. These relationships can lead to the creation of stable and long-lasting social influence channels between institutional researchers and decision makers.

Second, a dyadic notion of the institutional researcher/decision maker relationship is simplistic. In reality, it is much more complex. As shown in Figure 1, the institutional researcher is generally linked to outside information resources. More importantly, he frequently must work on a problem with several decision makers who may dislike one another or disagree on a solution.

Third, the emphasis on the importance of effective interpersonal contact between the institutional researcher and decision maker contrasts with much of the institutional research literature. That literature, by virtue of the issues upon which it focuses, implicitly assumes that the principal problem in institutional research is the provision of information which is technically and methodologically sound. This paper argues that interpersonal contact which enables the institutional researcher and the decision maker to understand each other's values, priorities, problems and methodological biases is a precondition for effective institutional research support. Gurel (1975) made the same point about the relationship of social program evaluators and program managers.

Conditions Contributing to Conflict

There are four basic conditions contributing to conflict between decision makers and institutional researchers. These include: differing organizational roles, value conflicts, status discrepancy and ambiguity, and communications breakdowns. The terms used to characterize these conditions in the sections below are used in the descriptive rather than normative sense.

Differing organizational roles. The decision maker and the institutional researcher fulfill different roles in the organization. Katz and Kahn's (1966) classification scheme for organization functions is used to distinguish between them.

Decision makers perform what Katz and Kahn called the managerial function. In general, managerial groups are responsible for resolving conflicts between hierarchial levels, coordinating and directing the activities of subsystems, and coordinating external requirements with organizational resources and needs. They operate in high pressure, political environments using primarily the "dynamic of compromise" (p. 95).

Institutional researchers serve an intelligence-gathering role for the organization. To guide the development of policies and procedures, they assemble for the decision maker information about the internal functioning of the organization and abouts its environ-

ment. Katz and Kahn referred to these as the regulatory and adaptive functions. Most of the information gathered by the institutional researcher, particularly that having to do with the environment, is change oriented. Frequently it entails a threat to the organization and to decision makers in particular. From these implied threats, conflicts sometimes ensue.

Value conflicts. Because they serve different organizational roles and have different professional backgrounds and career patterns, decision makers and institutional researchers do have value differences. Argyris (1971), Churchman and Schainblatt (1969), Dror (1971), and Gurel (1975) noted that the two groups take qualitatively different approaches to problem solving.

Decision makers tend to view decision making quasi-mystically as an act which should be entrusted only to the experienced politician or executive. These individuals are generally political and compromise oriented; they deal with problems in a piecemeal or incremental fashion and are sometimes threatened by institutional researchers and their sophisticated analytical techniques.

Institutional researchers, on the other hand, are generally apolitical, rational, scholarly, sometimes intellectually arrogant, and inclined to take comprehensive approaches to problems. The tools of their trade are aimed principally at providing rational and comprehensive analyses of problems and developing optimal solutions.

Status discrepancy and ambiguity. Decision makers and institutional researchers are not always happy with the roles they play in their relationships. Decision makers frequently resent being dependent on institutional researchers. Institutional researchers, for their part, often dislike being cast in supportive roles.

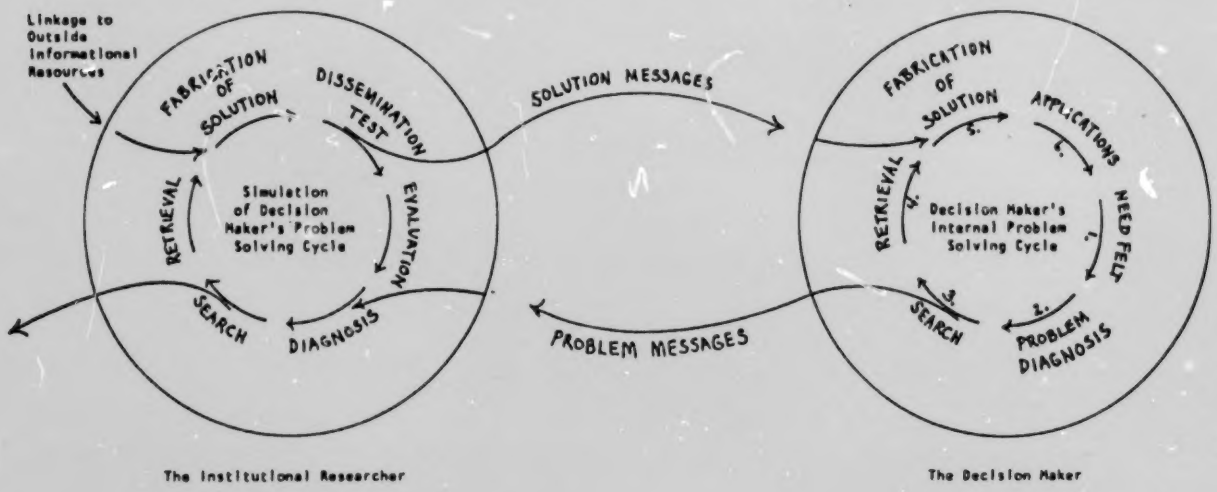
However, status discrepancy is usually less of a problem in the decision maker/institutional researcher relationship than status ambiguity. In effective working relationships, the two individuals must work quite closely together. Because each has a unique perspective and can make a genuine contribution to the decision-making process, it frequently becomes difficult to distinguish between the leader and the follower. Thus, on occasion, each side finds such ambiguity threatening.

Communications breakdowns. Holtzman (1970) indicated that good communications are essential to successful collaboration between the institutional researcher and the decision maker. There appear to be three basic reasons for communications breakdowns.

The first factor is what Holtzman categorized as simplistic, one-way models of communication. Such models lead to what Havelock (1969) described as "being out of phase." The institutional researcher may give a solution before the decision maker has articulated his problem or he may not have a solution when the decision maker needs one.

A second factor is overload. Katz and Kahn (1966) defined overload as information inputs in excess of those that the decision maker can handle. Frequently institutional researchers provide far more information than the decision maker can comprehend, or they make their messages virtually incomprehensible. Decision makers, for their parts, often contribute to the problem by failing to provide clear problem definitions.

A third factor is the language barrier. Institutional researchers and decision makers sometimes do not speak the same language literally or figuratively. A major problem in recent years has been the growth of technical language, or jargon, in the social and management



Note: Adapted by permission from *Planning for Innovation* by R. G. Havelock, Institute for Social Research, Ann Arbor, Michigan, 1969, pp. 11-16.

Figure 1. Idealized relationship between institutional researcher and decision maker

sciences. This language has infiltrated institutional research through the application of sophisticated analytical techniques drawn from these fields.

Factors Reducing Conflict

There are seven factors which can reduce conflict between institutional researchers and decision makers: linkage, structure, openness, capacity, reward, proximity, and persistence.

Linkage. Linkage is the degree of interpersonal connection and collaboration between the decision maker and the institutional researcher and the extent to which mutual communication exists between the two. The more they like each other and can collaborate in a genuine way, the more effective will be their day-to-day contact and exchange of information. Churchman and Schainblatt (1969) noted that both must recognize that they do not have all the answers and that each can make an important contribution to the decision-making process. This, they added, requires a certain "humility" (p. 187) by each one. Argyris (1971), Fowler (1970), and Holtzman (1970) suggested that effective interpersonal relationships and communications between institutional researchers and decision makers may be the critical factors in determining the ulitimate success of their collaboration.

Structure. Decision making should take place within a coherent structure which designates a rational sequence of steps, responsibility for coordination, and a division of labor. Effective collaboration requires that the institutional researcher and decision maker have a common understanding of the problem on which they are working, the constraints affecting the problem, the steps which must be taken to solve it, and an idea of what each must do to achieve the solution. The degree to which they are able to develop a structure and abide by it determines the effectiveness of their decision making. Churchman and Schainblatt went so far as to suggest that the institutional researcher and decision maker structure their relationship in a manner analogous to that employed in formalized debate. By this means, they maintained, the two different perspectives could be brought fully to bear on a decision-making problem.

Openness. Openness is the degree to which there is a readiness to give and receive information. By definition, persons with closed minds are incapable of collaborating effectively and of receiving new ideas. Openness is vitally important to the quality of the decision-making process.

For the institutional researcher, openness means a desire to help and to listen to the decision maker's problems. For the decision maker, it is more than a passive receptivity; it is a desire to reach out for new ideas and to experiment, and it is a willingness to adapt and to embrace change.

Capacity. Capacity is the extent to which large volumes of information for decision making can be effectively communicated. For institutional researchers, this means keeping communications short, using the simplest available analytical techniques which are appropriate to the problem, and minimizing the use of jargon. For decision makers, it means communicating their priorities and problems clearly and receiving information effectively.

Reward. Reward is the extent to which the two are reinforced by working together. The institutional researcher is rewarded when his work has an impact on the decision-making process and is appreciated by others. For the decision maker, reward is the relative advantage that he believes he receives from using the services of the institutional researcher.

Proximity. An important factor which is frequently overlooked is the hierarchical and physical proximity of the decision maker and the institutional researcher. Decision makers who are in close proximity to their institutional researchers are more likely to use them. Institutional researchers who have easy access to the decision makers they support are more likely to have an impact on the decision-making process.

Persistence. Persistence is the extent to which a message bearing on a given decision-making problem is repeated purposefully and effectively to achieve the desired result. Holtzman (1970) maintained that institutional researchers must find new ways to validate their recommendations to decision makers if they want to gain acceptance of their views. Frequently persistence, which does not grate, is required to communicate abstruse new ideas.

Interrelationships among these factors. Havelock (1969) pointed out that there are interrelationships and conflicts among the conflict-reducing factors. For example, proximity and openness are preconditions for effective linkage. Reward also appears to be a precondition to linkage and a result of structure. On the other hand, structure can stifle openness, and openness without structure can lead to chaos. Obviously the seven conflict-reducing factors form a complex web of interrelationships.

Concluding Comments

Two comments are provided in conclusion. First, the problem of establishing a relationship between the institutional researcher and decision maker is a two-way street. If either side does not desire to form a relationship, there is little that can be done to alter the situation.

Second, the paper represents a first attempt to conceptualize the working relationship of institutional researchers and decision makers. It is not intended as a prescription for institutional researchers who want to establish or improve relationships with the decision makers they support. Further theoretical development and research in specific settings are required before such applications can occur. It is hoped that this paper has generated sufficient interest in the problem to lead to the development of models which can be applied to actual institutional researcher/decision maker relationships.

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STATE AGENCIES, POLICY STUDIES, AND RESEARCH

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Every state now has some kind of state higher education planning agency. In forty-eight of the states, the agency has a statutory basis, and Delaware and Vermont each have a 1202 agency created by executive order. These agencies have a bewildering variety of legal responsibilities, operating procedures, staffing, and funding. The smallest has only one professional staff member and a budget of less than 100,000 dollars a year, while the largest has several hundred staff members and a multimillion dollar budget for the agency.

This paper is a preliminary review of the role of state agencies in the conduct and support of research and policy studies. Rather than work from a rigorous definition of research which would leave very little to talk about, I will attempt to characterize state activity on the basis of an analysis of recent reports and publications from state agencies, plus informal and unsystematic observations of their activity. As a research technique, this has a number of limitations, and these observations should be considered as tentative and subject to change on the basis of further analysis of state-level activities which the Evaluation of Statewide Planning Project will be undertaking in the next year.

Any generalizations that are made about state agencies probably have exceptions, and yet it is possible to characterize them in ways that are useful in understanding their roles in research and policy studies.

Before discussing these roles, let me make explicit some assumptions. First, every state needs an agency or organization that can do planning and conduct policy studies of the major issues in postsecondary education that face the state. Most states have recognized that they need to deal with the rapidly changing education scene in a more systematic and informed way. But the recognition of a need, which is reflected in the creation and modification of state-level agencies in almost all states in the past two decades, has been dealt with in a highly varied manner by different states. Because these policy-planning organizations were born in compromise, and often had rather vague responsibilities, they have usually had difficulty in responding to the conflicting expectations of educators, governors, and legislators. I will return to this issue a little later, but for now it is sufficient to observe that a substantial number of the states, probably at least half, do not yet have an effective policy and planning organization.

The second assumption is that an effective policy and planning operation must be based on research and information. Policy-planning agencies need not do much research themselves, but they must be able to see that it is being done and that it is being focused on issues important to policy development.

A third assumption is that an effective policy and planning agency must have credibility with state-level decision makers, the governor, the legislature, the budget office, as well as with educators and board members who are responsible for the operation of the state's institutions. Without credibility and influence, the agency's data reporting, analytic studies, and policy recommendations have no impact.

The Education Commission of the States, in cooperation with the National Center for Higher Education Management Systems and the State Higher Education Executive Officers, has recently completed a compilation of studies made by state agencies. The publications and reports of the states are a useful starting point in examining the level and nature of their policy and planning activities. In 1974-75 the state agencies released 555 reports and publications. This did not include planning and policy studies done by other state agencies such as separate state scholarship commissions, special governors' task forces, or separate 1202 agencies, nor does it include studies and reports by the legislature or by higher education institutions or sector boards. If all of these were included, the annual output of reports and policy studies might well exceed one thousand. There is a great variability among the states in both the number and kind of reports issued. A few states produced only a couple of reports in 1974-75, while a few others issued more than 40 reports.

Of considerably more interest than the number of reports is the kind of report. Obviously a master plan report which deals comprehensively with a large number of policy issues is more significant than a dozen reports which compile statistics (but do no analysis) on such varied subjects as dormitory vacancies, classroom utilization, out-of-state enrollment, or average tuition rates.

Much of what was reported was straight descriptive statistics: enrollment reports, degrees conferred, average faculty salaries, and similar information. In a sample appraisal of 122 of the 1974-75 state agency reports, approximately half were descriptive statistics with little or no analysis. Another 10 to 15% were annual reports or procedures manuals, designed to obtain comparable information but not supplying any analysis. Another one-fourth were special analyses of policy issues—usually on a one-time basis. Topics ranged widely—from the impact of collective bargaining on the budget process in one state to an analysis of the progress of junior college transfers in another. Finally, between 10 and 15% (depending on how policy relevance is defined) of the studies were either part of the master plan, or were analyses of broad policy issues. None in this sample, and only a handful of the total reports, could be classified simply as research, although some of the planning documents and policy studies were based on research and complex analyses.

It should be emphasized that these classifications are arbitrary and highly judgmental. One person's policy study may be another's research project, and a special problem analysis in one case may be classified as a broad policy analysis in another.

Much of the descriptive statistics collected paralleled the gathering of federal HEGIS information, although state information was usually more timely and detailed. It included enrollment reports, financial statistics, budget analyses and recommendations, data on facilities and earned degrees. Less numerous were reports on manpower needs in relation to degree output, and reports that dealt with quality or the outcomes of education were very infrequent.

It is apparent from their reports that state agencies spend a lot of their time in the development of information systems. A survey done about two years ago by Bob Barak indicated that approximately a dozen state agencies were well along in the development of comprehensive information systems that could be used in analysis and decision making. Indications are that that number has grown.

Such development represents a sizeable investment, providing only a springboard from which policy analysis and master planning can be launched. Information systems, almost by definition, cover standard areas such as enrollment, financing, and facilities. The Barak study showed that only in the areas of academic programs (where 41 states had inventories and other information) and physical facilities (28 states) did more than half the states have information systems under development, and there were more states with operational information systems in the physical facilities area than in any other.

There is a certain amount of information lag suggested by these inventories, because the provision of additional physical facilities in higher education is not a priority policy issue in most states at this time, while the cost of academic programs is an increasingly common policy issue. Yet only five states in 1974 reported that their information system generated program cost analyses, and only three of the five systems were fully operational and used in decision making (Barak, 1974).

The examination of recent reports and publications from state agencies (1974-75), as well as other surveys of state-agency planning activity leads to the conclusion that state agencies have spent most of their time, money, and staff effort in collecting data, applying fairly simple analysis to it, and using this to respond to budget requests, to review program proposals, and to provide routine reports to the public and the educational community. State agencies have also conducted a number of special analyses of problems, such as the need for new health-professions programs, state relations with private higher education, feasibility and desirability of state acquisition of private institutions, or off-campus instructional program standards. The methodologies of these special studies vary from exceedingly simple to very complex. A few studies are based on intricate computer models which can provide quantitative analyses of a variety of policy options, while others are based on limited data or qualitative evaluations by experts.

The impression I acquired from reviewing state publications is that there is great variability in the quality of the analysis but that most of it is fairly simple, and that research *per se*, or policy studies which make major use of research, are relatively infrequent.

There are several reasons for the present limited development of state-level policy studies and research. First, and probably most important, the audience for research and policy analysis primarily comprises public officials: executive branch staff in the governor's office, the state budget office, and, in some cases, the state planning office, legislators, and legislative staff. They usually want quick answers, simple answers, and analysis according to their format. For example, the budget office may specify the budget format and also the types of analyses to be performed. There are several examples of legislatures, or executive budget officers, specifying a new performance program budget format, only to go back to analysis of the new budget as though it were in the traditional incremental form. When asked why, the answer is, "We want it simple enough to understand, and these new procedures are just ways of confusing us. . . . Tell us what the bottom line is, in comparison to what it was last year."

This "incremental mentality" as one state higher education executive described the legislative attitude in his state, relates to other kinds of analysis, too, in the sense that legislators and other officials want presentations that are simple and in a familiar form. For example, George Wallace recently appeared on TV in his home state of Alabama, using the "fruit jar method" of policy analysis. This consists of displaying two fruit jars. One, full of nickels, is labled "Education Trust Fund," and the other, almost empty, says "General Fund." Wallace indicated that all he wanted to do was borrow a few nickels from the full jar to put in the empty jar, but that the teachers' association was so unreasonable and greedy that it was opposing him.

Complex answers have a hard time gaining an audience among state-level policy makers, even when there is a complex problem involved. As long as the ultimate decision makers (whoever they may be) react unfavorably to complicated or quantitative analyses, there will be a very strong tendency to keep analysis simple rather than to waste time on research or multivariate procedures which go unheard anyway.

A second reason that research and policy studies have not been emphasized by state agencies is that most of them are relatively new, have modest budgets, and exist in highly volatile political environments. When survival of the agency through some political tug-of-war is involved, no one has time to think about the long-range implications of issues, nor do they have the inclination to organize a research project; research and long-range planning are attractive to agencies with a long life expectancy. In a recent assessment of organizational changes in states agencies, I noted that during the last five years, in at least half the states, there had been either a governance change or extensive discussion about such change was associated with a legislative proposal. In the last year alone, there have been major political struggles in five or six states concerning restructuring higher education at the state level. During these episodes, very little planning can take place and very few new studies are launched.

The state-level agencies that are single governing boards appear to have more political stability, and it might be imagined that they would, as a consequence, launch more policy studies and do more long-range planning. The record does not support this hypothesis, however. Most of the states with single governing boards are small, and until recently some of these had very small staffs that functioned more as secretaries to the boards than as executive officers of the system. Staff

effort has been concentrated on management of the system rather than on long-range planning or policy studies.

The state agencies that have been most active in policy studies, have utilized more methodologically sophisticated procedures, and usually have considerable regulatory powers, are the coordinating boards in some of the middle-sized and larger states, such as New York, New Jersey, Ohio, Illinois, Minnesota, Tennessee, Texas, and Virginia. There are exceptions to this generalization, of course, and some governing board states like Florida, Utah, and Rhode Island have also been very active in policy studies. The state coordinating boards that are newer, those that have been under fire politically, and those with limited budgets have generally been less involved in complex studies and research.

A consideration of future trends brings to mind the question of whether the states will become more active in sponsoring and conducting research and policy studies. The complexity of the problems facing higher education suggests that the states should become more active, and there is some reason to think that they probably will. One indication of this trend is that more and more legislatures are employing professional staff who ask more complex questions and are more interested in sophisticated analysis. There is also a strong likelihood that legislative and executive staffs will be doing more of the analyses themselves and that, as a result, state higher education agencies may find themselves in competition with other state agencies in conducting policy studies. Whether this would improve the quality of analysis has yet to be determined, but it might have the effect of lowering the influence of state higher education agencies, with concomitant reduced stability of functions and roles. If that should occur, the capacity of state higher education agencies to do long-range planning and policy studies might be reduced.

A second factor is the likelihood that the state agency will develop a more competent staff and the information base necessary for more complex policy analysis. The state agencies have been attracting more competent young staff members and, in general, have been developing the financial and information bases necessary for policy analysis. Most state agencies are unlikely to develop sufficient resources to sponsor or conduct much actual research, but they are likely to be much more active in complex and sophisticated policy studies.

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THE USE OF ANTHROPOLOGICAL FIELD METHODS AS A MEANS FOR CONFLICT REDUCTION IN INSTITUTIONS OF HIGHER EDUCATION

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Institutional research can more effectively serve decision making in higher education if it broadens its methodology to include anthropological field methods. In the long run, use of such methodology would reduce conflicts generated at all levels of the organization and increase efficiency as well as effectiveness. This reduction in conflict would result from a better identification and a clearer understanding of the norms and values existing in the internal and external environment of the institution—the arena in which decisions take place.

Anthropology

Anthropology emphasizes the study of man as a whole, his total way of life. This fundamental proposition is similar to that of a systems analysis: no part of behavior can be fully or accurately understood in isolation but must be considered in the context of the whole of the social behavior of the group under study. Generalizations about the nature of culture and of (wo)man are arrived at only after a comparison has been made of the behavioral patterns in a wide variety of cultures. Generalization is often not as essential to anthropology as is understanding human behavior in the real environment in which it occurs.

Data are typically generated by field methods. These include participant observation as a means of observing incidents in their natural social context; the enumeration of activities, events, or objects to create a documentation of frequency data; and the interviewing of informants to learn institutionalized norms and the status of other individuals (Zeldich, 1962). Informants can also be used to learn of occurences that the anthropologist is forbidden to witness or that would be disrupted or altered by the presence of an observer.

Finally, anthropology studies culture. The anthropologist's use of the word culture is not to be confused with the more commonplace use of the word to mean intellectual or artistic refinement. The *American Heritage Dictionary* (1976) defines culture in the anthropological sense to be "the totality of socially transmitted behavior patterns, arts, beliefs, institutions, and all other products of human work and thought characteristic of a community or population." The anthropologist views culture as a whole system that is complete unto itself, a system of learned behavior that is transmitted from other members of the culture, and the characteristic behavior of the members of a group. Furthermore, behavior patterns are selected from a wide variety of possible behavior in accordance with the dominant assumptions and values held by the culture.

The goal of the cultural anthropologist is to selectively record human behavior for the purpose of constructing explanations of it in cultural terms (Wolcott, 1970). To the extent that the anthropologist is successful, the information which he or she generates about social processes can be used to predict the consequences of events which occur in the culture, whether internally generated, like a marriage, or externally generated, like a drought or contact with another culture. The anthropologist is an empathetic observer who seeks to discover how the people being observed feel about an event.

Anthropological field methods. The cultural anthropologist is well aware of the detractors of anthropological field methods. These methods are decried as unscientific, subjective, nonrandom and tending to produce nongeneralizable data. Furthermore, the methodology is inefficient, since a standard ethnology takes a minimum of two years to produce (one year for field work, and the second year for analysis and the preparation of a report). Then what unique contribution does anthropology offer that other social sciences, such as educational psychology or sociology, don't?

Anthropologists insist on naturalistic observation. They contend that removal of phenomena from their normal context may distort the phenomena. Psychological research, on the other hand, usually entails the use of controls in experimentation. First, since the normal social or physical context for behavior rarely can be controlled for intervening variables, subjects are usually studied outside of their normal surroundings. Secondly, much of psychological literature is based on studies by questionnaires that the anthropologist might use as an adjunct to field work but not as the sole source of data. The anthropologist views verbal behavior (written or spoken), as only one aspect of behavior to be understood in the context of other behavioral indicators. Third, psychologists usually try to understand individual behavior by dividing behavior into ever smaller units, such as the response of a specific individual to a specific stimuli. Anthropologists deal more with the totality of both individual and group behaviors than with the precise process by which these behaviors are acquired.

Anthropology is more akin to sociology than to any other social science. Frequently, anthropology and sociology overlap in interest in areas such as social organization and behavior. However, anthropologists tend to study a particular culture or subculture in depth while sociologists examine the more generalized forms of social systems. Sociologists also place more reliance on statistical data and procedures. The anthropologist emphasizes inductive reasoning and reasoning by analogy while the sociologist, as well as the psychologist, constructs deductive theories.

Anthropology is also significantly different from both psychology and sociology in the source of its hypotheses. The source of anthropological hypotheses is the systematized observation of the real world (Ianni, 1976). This is radically different from the preconceived notions of how the real world operates that are the usual sources

of hypotheses in psychology and sociology. Hypotheses, however generated, can be tested by a multi-method approach (Hill, 1970). The generation of meaningful hypotheses to be tested is usually a more difficult problem in research than the development of tests to indicate the degree of correctness of these hypotheses.

The insurmountable methodological problem for the anthropologist is that each anthropologist is his or her own research instrument. As a trained observer, however, the anthropologist compensates for this problem as much as possible by an awareness that the problem exists. Observer bias limits all experimentation, but the problem is compounded for the anthropologist since the instrumentation (the anthropologist) changes during the course of the experiment.

Anthropologists are often able to generate information through participant observation that is more difficult, or even impossible, to generate through either questionnaires or interviews. Information that a subject finds embarrassing in the formal interview is not likely to be brought out in that interview. Information that is incriminating is not likely to appear in response to a questionnaire. Statements about dishonest or illegal practices, sexual relations, and the use of intoxicants fall into these categories. Participant observation, since it involves an extended study of one group of people, allows the observer to gain the trust of the people being observed. As this trust relationship grows, anthropologists report that the kinds of information to which they are given access also grows. Such information can be useful in decision making, but its distribution might be constrained by the ethical code of the anthropologist.

Other kinds of information may not be incriminating or embarrassing, but members of organizations might prefer to keep this information from their superiors so that their superiors will believe they are behaving differently than they actually are. Questionnaires that ask people how they spend their time are likely to generate less accurate information than can be obtained by participant observation. Less than a 100 percent return of questionnaires and strategic responses to questions are two problems the participant-observer does not face.

Anthropological research as a means of conflict reduction. The key to understanding how field methods could reduce organizational conflict in an institution of higher education is the focus of field methods on values. The anthropologist believes that by the observation of behavior, the real, as opposed to stated, values of the target group can be understood.

The primary link between field methods and organizational theory is predicated on the notion that the real values of a group determine the real goals those people pursue. In conjunction with the standard data on courses, facilities, finances, staff, and students, the use of information generated by field methods will allow a decision maker to better predict the consequences of his decisions. Planning means projecting all the consequences, good and bad, that would arise from alternative courses of action. Perfect planning is not possible, but, by definition, only the best information can lead to the best planning. The institutional researcher, in the role of "provider of information", should seek the best information available in order to best provide for the needs of decision makers. Anthropology's major contribution to decision making is to introduce decision makers to potential consequences not considered by other disciplines and methods.

The cost of any research has to be considered in terms of benefits derived. The services of an anthropologist, which might be purchased for $15,000 a year, are small compared to other forms of self-study. An accreditation report for a single college in a university may have an opportunity cost to the staff and faculty of the college in excess of $150,000. The printing costs alone for one such self-study were nearly $10,000.

Even without considering comparative costs, the benefits of anthropological research can be high. Much of the facilities planning in the 1960s that resulted in the over construction of dormitories was based on demographic studies and enrollment projections. Had the values of the high school students who made up this population been studied, that is, had the values of the population which was supposed to inhabit these buildings been determined, then apartments might have been built instead of dormitories, or the institution might have opted to stay out of the housing business altogether. At the University of Iowa there has been an annual and costly debate between the administration and the freshmen and sophomores about a rule that requires freshmen and sophomores to live in dormitories. This requirement is necessitated by the need to pay off the bonded indebtedness that resulted from past planning decisions based on too narrowly defined criteria.

Organizational Conflict

Naturally, field methods cannot be expected to reduce all institutional conflicts. The following sets of propositions do not describe the state of nature but possibilities. The purpose of these sets is to explore organizational conflict as it might exist for the institutional researcher and to show how anthropological field methods might help to resolve such conflicts.

Proposition 1:

1. Institutional researchers control a scarce resource, knowledge.

2. Control of a scarce resource gives the possessor of that resource power. (Power is the ability to affect outcomes of events.)

3. Institutional researchers can use this power to enlarge their operations beyond the needs of the organization to which they belong.

That is a description of suboptimization, the optimal growth of a subunit of an organization that results in lowering the overall effectiveness of the organization in meeting its goals. Field methods cannot effect the extent to which an office of institutional research suboptimizes in an organizational context. It can, however, help an office of instititutional research avoid suboptimizing in a methodological sense, for example, avoiding excessive study be one methodology or in one area that could result in a less than optimal set of information for decision makers to use.

Proposition 2:

1. Institutional research originated in response to an increased demand for organizational efficiency.

2. The goal of institutional research is to increase organizational efficiency (the survival or growth of the institution, and a reduction in the cost of operations) and is not concerned with organizational effectiveness (pursuing truth, excellence, and the creation, assessment,

and distribution of knowledge).

Proposition 2 is a description of goal conflict: the conflict in purposes between two subunits of an organization (for example, institutional researchers and faculty members). Field methods can be used to establish the extent to which the values of these two groups actually diverge. One spin-off from an ethnographic study of an institution should be value clarification, so that people can at least agree on what they disagree about and on the depth of such disagreement. This knowledge may result in an overall reduction in conflict within an organization. However, if the conflict in values is deep, distribution of such knowledge may actually increase conflict.

Proposition 3:

1. The goal of institutional researchers is to provide useful information to decision makers.
2. Institutional researchers spend all their time and energy analyzing data.

Proposition 3 describes goal displacement, the substitution of means for ends. In this instance, it is no longer important for the institutional researcher to provide useful information to decision making. The elegance of statistical methods takes precedence over the usefulness of the final product. Anthropological field methods cannot reduce this kind of conflict. In fact, in the short run, anthropologists might exemplify data gathering rather than information supplying. It would probably take at least six months before any significant data would be made available to decision makers, but effectiveness is measured in the long run rather than the short run.

There is a methodological corollary to this third proposition: Institutional researchers use quantifiable data as the source of the information they provide decision makers.

This corollary is based on the notion that what is quantifiable is important to decision makers. There is no reasonable quarrel with this idea. However, one should not assume that only quantifiable data is important in decision making. Institutions of higher education can be considered meritocracies that lack a widely accepted definition of merit. The decisions made about the merit of a person, program, or procedure are based on the values of the decision makers and the pertinent information that they have. Since the acceptance or rejection of a proposition is ultimately based on a subjective evaluation of the good or worth of the proposition, it is illogical to supply only hard or quantifiable data to the decision maker. Field methods are well suited to providing an alternative, soft set of information for decision making.

Proposition 4:

1. Institutional research centralizes information.
2. Possessors of this information have power.

Proposition 4 is a continuation of the argument of

Table 1

Topics for the Contents of Institutional Research Studies

Topic	Rationale from proponents of each topic
"The Big Five" (course, facilities, financial, staff, and student data)	This constitutes the nuts and bolts for institutional decision makers. Knowing this information is the key to efficiency.
Decision-making theory	It is most important to know how decisions are made at various levels of the institution in order to predict information requirements for decision making.
The history of decision making at the institution	Past behavior is generally the best indicator of future behavior.
Collective bargaining	A decision maker must be prepared to deal with conflicts before they arise.
What constitutes failure in an institutional subunit?	Efficiency and effectiveness are both enhanced when "dead wood" is removed.
Philosophy	Decision making will become consistent and ethical only when administrators understand their philosophical biases and ethical responsibilities.
Values	Understanding the values of the various subcultures of an institution is the best way to predict the consequences of an administrative decision.
The external environment	This is the key survival interface in an organization.
Budgeting	Shifts in budgetary emphasis indicate the real values and the real power bases in the institution that constitute the internal environment for decision making.

Proposition 1, but at a higher level in the organization. As stated earlier, power is the ability to affect outcomes, to determine consequences. Authority is the right to set goals and initiate activities. Centralization of power differs from centralization of authority and, by definition, can have a more serious effect on outcomes. If the information generated in institutional research is not shared equally throughout the organization, the power of information is centralized in the hands of those people who possess the information. If decentralization of power is desirable because it allows for a better pursuit of academic goals, then centralization of information, or power (ergo), is dysfunctional. This argument is again one of goal conflict. The addition of anthropological information would increase the power of the person possessing it. This effect might be tempered by the enculturation of the decision maker into non-elitist thinking, in which case the decision maker would not be tempted to try to force his values on other members of the organization (for example, strive for efficiency at all costs).

Proposition 5:

Institutional researchers should supply decision makers the best information for decision making.

Proposition 5 represents internal conflict for the institutional researcher, because he or she must decide how and where to allocate the scarce resources of time, energy and money in the search for optimal decision-making information. Table 1 lists several, though by no means all, possibilities for research, and each topic implies the need for a different methodology for discovering and processing data. Methodology has a profound impact on the kinds of information institutional researchers can provide decision makers. To accept a methodological *status quo* has ethical implications (Sjoberg, 1975) and to reject it implies risk. The only escape from such conflict is through ignorance or faith.

Summary

To the extent that institutional research is a profession (Lyons, 1976, p. 3), it must have a clientele. The clientele for institutional researchers are the decision makers of the institution to which the office of institutional research is attached. As a profession, institutional research must also perform a service, and the primary service institutional research performs is the generation of information for use within the institution. As professionals, institutional researchers are ethically obligated to provide the best possible service to their clients.

The arguments contained in this paper have led to the conclusion that institutional research can be improved by broadening the search for information about the institution and that anthropological field methods provide one means for accomplishing this task. Specifically, information derived from anthropological methodology can give institutional decision makers a clearer understanding of the values of the people affected by a particular decision. Used in conjunction with other information, this knowledge of values can lead to decisions which can reduce conflict in an institution while at the same time increasing institutional efficiency and effectiveness.

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THREE YEARS INTO THE FUTURE AND BEYOND WITH A POSTSECONDARY DEMAND AND ENROLLMENT MODEL

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In the late 1960s, a situation was occurring in Manitoba universities similar to the experience of most North American colleges and universities—declining enrollments. In the fall of 1970, a sharp dip occurred in the rate of increase of postsecondary enrollments. This led to high forecasting errors and serious budgetary ramifications; these in turn led to reexamination of enrollment forecasting models and resource allocation procedures.

The Manitoba Experience

In the fall of 1971, after experiencing a sharp dip in the rate of increase in postsecondary enrollments in Manitoba, the Universities Grants Commission began exploring alternative approaches to enrollment planning. This led to the undertaking of a research and development project, Post-Secondary Demand and Enrollment Model-I (PDEM-I) directed at the student's decision-making process and seeking to identify, profile, and model the cross pressures and impacts leading up to the final postsecondary decision outcome.

Year one of the three-year demand assessment project involved three snapshot surveys of grade twelve decision making during February, May and June. Once the actual outcomes became available for comparison with the forecast, a one-to-one follow-up validation was undertaken to determine whether the significant factors in the decision-making process had been correctly identified and weighed.

Year two was undertaken with increased confidence in the methodology and the number and timing of snapshots changed to December and May.

Year three's forecast took the final step out in time with a single snapshot taken in October 1973, and the forecast was presented on December 1 for budgetary consideration.

Before the project was undertaken, acceptable levels of enrollment-forecast error for the total university system had been set at two percentage points. Each respective forecast of university enrollment for years one, two and three was within this target error.

After the first year's effort, a Post-Secondary Research Reference Committee of Manitoba was formed to provide province-wide support and to assure direct involvement by the departments, institutions and agencies most affected. This committee comprises representatives of the three provincial universities, the community colleges, the Universities Grants Commission, the Department of Colleges and Universities Affairs, the Department of Education, and various other government agencies such as the Youth Secretariat. As such, the committee's major objective is to provide information to assist with the effective planning and management of postsecondary education at the systems and institutional level.

The research and development phase produced PDEM-I and a series of highly accurate forecasts with a one-year time frame horizon.

The second phase of the Manitoba Experience, Post-Secondary Demand and Enrollment Model-II (PDEM-II), reflects a movement towards in-house operational status, a longer range forecasting potential, and a more comprehensive modeling process to support a broader array of policy simulations.

A comparison of PDEM-I and PDEM-II would indicate an extension of the forecasting range from one to three years forward with extrapolations of the emerging trends and shifts in demand for 4 to 15 years into the future. PDEM-II represents a longitudinal dialogue with students from grade ten through their twelfth year in high school. In contrast, PDEM-I assessed plans and aspirations of only grade twelve students, many of whom had closed planning options in grades ten and eleven.

The primary objectives of PDEM-II are (a) to provide a demand forecast of postsecondary enrollments in Manitoba for three years forward and (b) to allow for the simulation of policy decision variables to assess their probabilistic impact on postsecondary education.

Specific objectives are the following:

1. To provide information on the shifts in student preferences for postsecondary education
2. To develop profile characteristics of individuals based on various states—going, going impacted, undecided, not going, etc., and on preferred options of those students shifting preferences for postsecondary education
3. To provide information on barriers, real or potential, to postsecondary education
4. To provide information on the educational background of students who wish to but are not going to enter postsecondary education so that the need for adjustment by postsecondary institutions to accomodate such students might be identified
5. To assess the timing when interested students would like to enter postsecondary education
6. To provide information on the Manitoba Student Aid program with respect to (a) characteristics of financially impacted students, (b) distribution of demand for student aid, and (c) awareness of student aid
7. To describe the adequacy of the counselling services from the students' perspective
8. To establish and chart shifts in the groups of individuals influencing the plans of students.

Characteristics of the operations demand model are as follows:

1. *Comprehensive:* It is a comprehensive model incorporating all significant elements and influencing

variables related to the student's decision-making process during the last three years of secondary and the matriculation to postsecondary, employment and other outcome options.

2. *Dynamic:* The approach is dynamic, based upon samples of sequential demand from each generation of students in grades 10, 11, and 12 and distributed in terms of life context, motivation and characteristics that are unique to each year's subgroup.

3. *Sensitive:* The demand approach is particularly sensitive to measuring change in the student's attitudes towards postsecondary institutions and programs. Thus far, the PDEM-I has an impressive track record reflecting correct detection of shifts in each on-coming generation.

4. *Conceptually sound and rational:* This approach makes a clear distinction between demand and enrollment and offers a detailed explanation for the interrelationships and independent variables accounting for the transition loss.

5. *Self-corrective:* The approach allows the user to trace each forecast back to its origins and, thereby, improve the model as required, based upon actual outcomes.

6. *Interactive simulation:* An important characteristic of the model will be its ability to generate alternative scenarios with respect to changing policy decision and to view and review the probable impact related to systems, institutions, and programs. An interactive model will allow the user to resimulate adjustments in resource reallocations, quotas, and admissions criteria.

7. *Range:* The model provides intermediate-range forecasts based upon demand with a three-year time horizon. These demand parameters are then attached to traditional forecasting for years 4 through 15.

The sample is reflective of both high and low secondary schools with reference to postsecondary participation. A selection of schools with high dropout rates in 10th, 11th, and 12th grades are also included. Finally, regional representation and balanced rural-urban groupings are reflective of further efforts to encompass key subgroupings.

Demand Survey Highlights

The current demand survey assesses the following areas and, in combination, provides a profile of each class and its motivation towards or away from postsecondary options. Survey items include

1. The postsecondary plans of 10th-, 11th- and 12th-grade students
2. The degree of influence that individuals, parents, high school activities and circumstances had on the students' decisions to continue or to discontinue their education
3. The impact of possible future events on student decisions
4. The students' aspirations, expected career choices and long-range plans
5. Background questions concerning faculty size, previous schooling, type of community where students grew up, and so on
6. The students' academic standing
7. The students' choices of institutions and programs
8. Optional questions concerning parents' education and family income
9. The financial situation in the province and the students' financial prospects (expected sources of financing, student knowledge of tuition fees, and student aid)
10. Reasons for grades 10 and 11 students not completing high school

Supporting data from colleges and universities require the clear identification of each programs' sequential and nonsequential students by high school of origin and date of matriculation. Operationally defined statements of admission criteria, waiting lists, and manpower purchases are also required.

Our experience in the Manitoba situation has suggested that considerable economy can be achieved with a comprehensive total by large-group sampling once each three to five years—approximately 20 percent of the population with smaller samples, about 7 percent yearly between larger samples. On a one-time trial basis, the total population of French-speaking students is being surveyed to assist the planning of Manitoba's St. Boniface College.

Applications in the Manitoba Setting

The ultimate question that concerns the policymaker is what application the PDEM has for the operation of a provincial or state education system. More specifically, what is the utility of this forecasting process and the information generated? The response to this question is readily apparent by examining the uses made in Manitoba. The major contribution of the PDEM-I model is that it made significant impact upon the educational decision-making process and structure at all levels: provincial, divisional, and institutional. Most importantly, the contributions have been applied at all organizational levels: policy, management and operations.

A review of the applications would include those by various government agencies and the university sector.

1. *Various government agencies:* Various government agencies supply information on the pure demand for community college courses. This information is used in the multiyear planning process of the Community Colleges Division and represents one of a number of sources of demand information used by community college planners and managers to develop enrollment plans.

The Department of Student Aid uses information from the surveys to determine actual grade 12 awareness of the Manitoba Student Aid programme. Information from these surveys has resulted in the development of a province-wide public relations strategy and also supplies the department with information on the potential demand for student aid.

The Youth Secretariat has used information from the surveys in planning programs for high school youth, particularly for potential "stepouts" from the public school system and for summer and part-time employment planning.

Public schools have used the information in planning needed changes in their student personnel programmes.

2. *The university sector:* The Universities Grants Commission utilized PDEM-I one-year forecasts as a basis for funding on expected enrollments.

The PDEM-I and II have been applied as an early warning system to detect major shifts in student demand

at the system, institutional and program levels.

The movement towards multiyear planning will be supported in part by the simulation of enrollment and program options and the identification of new alternatives based upon PDEM-II.

At the present time, traditional forecasts are being adjusted to disclose the highly probable zones based upon forward assessment of demand as contrasted to the traditional historical approach.

In conclusion, the development and operation of the PDEM model has enhanced the educational decision-making process and has made it more responsive to changing student needs. Finally, for the policy maker, planner, and administrator, this forecasting tool has enhanced understanding of the attitudes, plans and motivation of that segment of the population on the horizon of postsecondary education. This alone may improve the quality of planning, policy making and decision making and thereby enhance the quality of future educational opportunities for youth in Manitoba.

ASSESSING THE IMPACTS OF FUTURE STUDENT DEMAND: AN APPLICATION OF A DEMOGRAPHICALLY DIFFERENTIATED PROJECTION MODEL

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The changing composition and magnitude of enrollments and their uncertain prospects are causing conflicts within the higher education community concerning the allocation of fiscal resources, the selection of goals, and the establishment of program priorities. Because the enrollment question is central to the resolution of these issues, institutions as well as jurisdictional bodies have become increasingly concerned with the determination of future student demands and the question of how the educational process can adapt to them. However, if this assessment is to be of utility, it must be focused upon the patterns of individual behavior rather than extrapolations of historical measures of enrollment.

For some years, it has been customary to forecast enrollments in higher education from the simple cohort relationships of enrollments to births, secondary school graduates, or the traditional college age population (Mangelson, Norris, Poulton, and Seeley, 1974; Orcutt, Greenberger, Korbel, and Rivlin, 1961). The procedure provided quite accurate results inasmuch as the proportional distribution of the demographically differentiated segments of the higher education enrollment retained some degree of stability over time. But the prospective shifts in the composition of our population suggest that the constant proportionality phenomenon will not prove to be applicable in the near future. By itself, the changing character of our population indicates the need for a new and somewhat more complex model for projecting enrollments, one which recognizes a variety of differentiated population sectors and their uniquely characterized patterns of participation in various types of educational experience. This presentation concerns an example of an endeavor directed toward development of such a model.

Background

The model is an outgrowth of a program conceived by Pennsylvania's higher education coordinating board, directed by its jurisdictional agency, and conducted by a committee composed of representatives of both this agency and a cross section of educational institutions. The directed purpose of the program was the preparation of appraisals of the impacts upon future enrollment that result from the application of a variety of policy assumptions developed to achieve explicitly defined goals. As such, it was designed to serve as an instrument for evaluation of enrollment questions of a "what if" nature. Frequently, in the course of deliberations, the participants were frustrated in their attempts to quantify the effect of some hypothesized goal. The practical realities of time constraints led to employment by the committee of coping mechanisms to meet its immediate obligations (State Board of Education, 1974 and 1975). However, inadequacies of the existing informational and methodological base also led to a resolution to pursue in parallel the correction of these deficiencies in order to refine or even revise the initial findings.

The first step toward this goal came as a result of two unrelated developments within the provinces of the normally assigned responsibilities of two of the members. First, an age- and sex-differentiated model for projecting the population of the state was completed (Senier, 1975a and 1975b). Second, a survey of the age and sex composition of both the full- and part-time enrollments in the state's colleges and universities was conducted (Division of Education Statistics, 1975). Although these two data sources were not fully consistent with one another, they were sufficiently compatible from a specification standpoint to justify proceeding with the formulation of a model for projecting statewide enrollments in various types of organized educational activities from a demographically differentiated population forecast.

Formulation

Conceptually, the model is based upon the premise that a sector of the general population, possessing a set of demographic characteristics distinguishing it as unique from all others, has an associated set of probabilities which describe its distribution among various types of organized educational activities. If these participation rates are constant or projectable over time, they may be employed, in conjuction with a suitably disaggregated forecast of the population, to generate a projection of enrollment.

Mathematically, the formulation for calculation of the demographically and educationally unique components of enrollment may be expressed as

$$E_{e,d,y} = (P_{d,y})(r_{e,d,y})$$

where $E_{e,d,y}$ = enrollment of persons with demographic characteristics d in educational activities e in year y; $P_{d,y}$ = population with demographic characteristics d in year y; $r_{e,d,y}$ = participation rate in educational activity with characteristics e of persons with demographic characteristics d in year y.

PROJECTION MODEL

From these enrollment components, aggregations of enrollment over common demographic and educational characteristics may be computed from the equations

$$E_{d,y} = \sum_{e=1}^{n} E_{e,d,y} \quad \text{for d and y} = 1,2,3 \ldots n,$$

where $E_{d,y}$ = enrollment of persons with demographic characteristics d in year y,

and

$$E_{e,y} = \sum_{d=1}^{n} E_{e,d,y} \quad \text{for e and y} = 1,2,3 \ldots n,$$

where $E_{e,y}$ = enrollment in educational activity with characteristics e in year y.

Data Requirements

For application as a forecasting vehicle, two types of information are required for use of the described relationship. First is a demographically differentiated forecast of the population for each year in the time horizon. The second is a set of participation rates of each of these demographically differentiated population sectors within various educational activities for the base year and for any years within the time horizon in which changes are anticipated.

Specification of demographic and educational characteristics. The potential number of discriminating characteristics associated with college attendance is extensive. Summarizations of various research efforts in this area have been prepared by Folger and Nam (1967), and Shryock and Siegel (1975). For development of a projection model, the selection of characteristics is case-specific and limited to those on which measurements can be provided or estimated from existing data.

For our purposes, population was demographically differentiated by the two sexes, two racial categories, and five different age groups. The participation of each of these population sectors within higher education was further disaggregated by type of attendance and five different levels of study. The specifications of these characteristics are detailed in Table 1.

Population projections. A projection of population for as many as twenty-five years was obtained by application of a sector-differentiated model for Pennsylvania developed by Senier (1975a and 1975b). Because the demographic differentiation from the population model is limited to sex and five-year age groups, certain adjustments were made in the composition of the output. Racial distribution was introduced, using data collected by the U.S. Bureau of the Census (1970), and the age categories were recompiled in accord with the specifications cited previously.

Participation rates. The participation rates may be introduced simply for the base year, in which case the enrollment projection will reflect only the impact of changing population composition, or for a series of years in the time horizon as well, in order to show the impact of prospective shifts in participation.

For our purposes, rates applicable to Pennsylvania for the base year were computed from measures of enrollment, appropriately disaggregated demographically and educationally, and from the similarly demographically differentiated population.

For those educational activities circumscribed by the credit categorization, opening fall enrollments by level of study and type of attendance (Hummel, 1976) were employed. These, in turn, were further subdivided racially by the use of data collected in connection with the so-called federal compliance report (Hummel and Nunemaker, 1975) and age-wise by employment of an age distribution survey (Division of Education Statistics, 1975).

Table 1

Demographic and Educational Characteristics

Demographic	Educational
Sex:	Attendance:
Male	Full-time
Female	Part-time
Race:	Level of Study:
White	Credit
Racial minority	Occupational
	Baccalaureate
Age:	First professional and graduate
18 to 22	Unclassified
23 to 25	Noncredit
26 to 30	
31 to 35	
36 to 55	

The noncredit category of enrollment represented a unique problem, inasmuch as unduplicated counts of enrollment in this category at a fixed point in time are not typically compiled. Thus, data compiled in two special surveys on adult education made by the U.S. Bureau of the Census for the National Center for Education Statistics (1974 and 1975) were employed to derive appropriate participation rates in noncredit educational activities offered by institutions of higher education. Inasmuch as the surveys were conducted on a nationwide basis, the use of the participation rates derived from these data is explicitly conditioned on the assumption of applicability to Pennsylvania.

Application

The model, which has been programmed in PL/1 for use on an IBM 370, generates projections of enrollment by multiplying the disaggregated population projection by the similarly differentiated participation rates for each educational sector. A facsimile of the output for two years is shown in Table 2. Head count enrollments are displayed in terms of sex, race, attendance, and level of study. In addition, selected aggregations over common characteristics are compiled, as is a summary conversion to full-time-equivalent enrollment.

Use of the model may be directed to three types of situation. First, it may be employed simply as a comparatively refined method of forecasting. Second, it may be useful for identification of salient trends in the composition of enrollments which might otherwise go unnoticed. Third, it may find application for assessment of the impacts of various assumed goals in a typical "what if" mode. Illustrative examples of each of these three cases follow.

Table 2

Projected Higher Education Enrollments (Thousands)

	1981						1982					
	Occupation	Baccalaureate	Graduate	Unclassified	Noncredit	All	Occupation	Baccalaureate	Graduate	Unclassified	Noncredit	All
1. Full-time	33	254	37	5	0	329	33	250	37	5	0	325
2. Male	19	141	26	3	0	189	19	139	26	3	0	187
3. White	18	131	24	3	0	176	18	129	24	3	0	174
4. Minority	1	10	2	0	0	13	1	10	2	0	0	13
5. Female	14	113	11	2	0	140	14	111	11	2	0	138
6. White	13	107	10	2	0	132	13	105	10	2	0	130
7. Minority	1	6	1	0	0	8	1	6	1	0	0	8
8. Part-time	18	57	52	41	154	322	18	58	52	41	156	325
9. Male	10	30	26	19	78	163	10	31	26	19	79	165
10. White	9	28	24	18	73	152	9	29	24	18	73	153
11. Minority	1	2	2	1	5	11	1	2	2	1	6	12
12. Female	8	27	26	22	76	159	8	27	26	22	77	160
13. White	7	25	21	20	71	144	7	25	21	20	72	145
14. Minority	1	2	5	2	5	15	1	2	5	2	5	15
15. Total male	29	171	52	22	78	352	29	170	52	22	79	352
16. Total female	22	140	37	24	76	299	22	138	37	24	77	298
17. Total white	47	291	79	43	144	604	47	288	79	43	145	602
18. Total minority	4	20	10	3	10	47	4	20	10	3	11	48
19. Total head count	51	311	89	46	154	651	51	308	89	46	156	650
20. FTE	39	273	54	19	51	436	39	269	54	19	52	433

Improved methodology. Because the model differentiates among a wide variety of population sectors and their appropriate educational activity patterns, the enrollment projections are sensitive to changes in population composition. As a result, the projection may exhibit a pattern significantly different from that produced by a typical relationship of enrollment to a single cohort of population. This divergence is particularly noticeable in those situtations of shifting population composition, a phenomenon which will be characteristic of the forthcoming decade.

Figure 1 shows two projections of the total head-count credit enrollment for Pennsylvania over the next 15 years. The higher of the two projections was developed from application of the described model and reflects the effect of changing population composition inasmuch as current participation rates are assumed to be applicable over the full time-horizon. The lower projection was computed by applying an historically observed relationship between enrollment and the traditional college-age (18 to 22 years) population to a projection of this same population to a projection of this same population sector.

Trend identification. Since the model projects the enrollment for individual demographic-educational sectors independently from one another, the output from the application may be useful in identifying salient trends in the composition of future enrollments.

For example, figure 2 shows the projections of both full- and part-time credit enrollments for Pennsylvania through 1990, assuming continued applicability of the current participation rates. The upper curve, portraying full-time attendance, reflects a significant drop after 1980, whereas the lower curve, applicable to part-time enrollment, continues to exhibit a growing trend through 1985.

Impact assessment. Inasmuch as the model is formulated in a way to facilitate alternation in the participation rates of the population sectors in various educational activities over time, it may be employed to measure the prospective impact of assumed changes in participation during one or more years in the time horizon.

The characteristic "what-if" mode of application is illustrated in figure 3, showing two projections of total head-count credit enrollment for Pennsylvania over the 1975-80 time span. The lower of the two projections is based upon the assumption of continued applicability of current participation rates. The upper projection portrays the total enrollment if the participation rates of female sectors of the population increase linearly over time to rates equivalent to the male sectors of the population by 1990.

Further Innovation

The institution of innovative efforts directed toward refinement of the described model will depend, in large measure, upon perceptions of its utility by policy makers. Aspects deserving further attention may be divided into those confined to the existing set of specifications and those expanding upon the array.

Within the former category, an area of obvious merit concerns the development of the availability

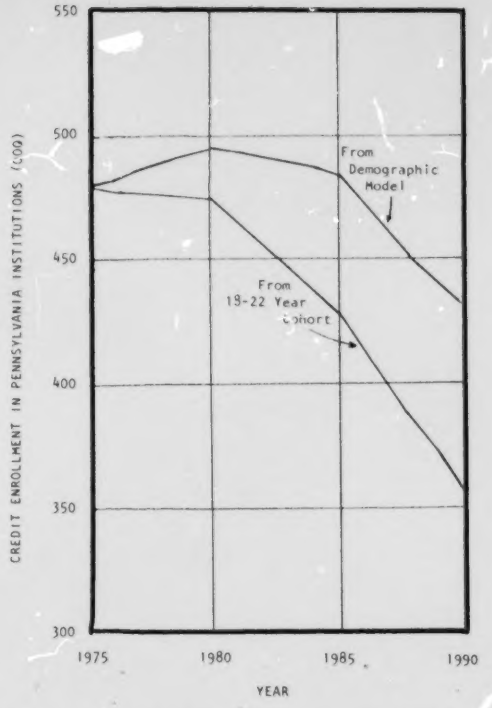

Figure 1. Comparison of enrollment projections from demographic model and college-age (18-22 years) cohort.

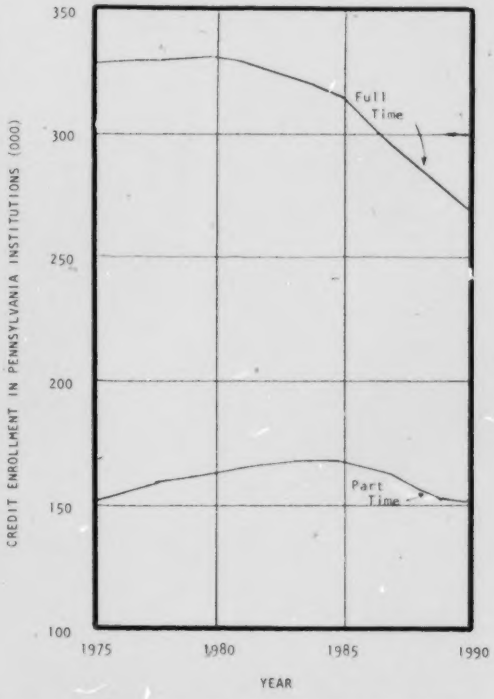

Figure 2. Differentiation by attendance status of enrollment projection from demograhic model.

of measures which are fully consistent with one another and do not rely upon approximation. Of specific note are those related to the educational sector of noncredit enrollment. Although the existing deficiencies could be overcome through institution of additional survey vehicles, there is reluctance to contribute to the already significant burden imposed by these instruments. Therefore, prior consideration will need to be given to the application of sampling procedures.

Concerning innovations expanding on the existing specifications, the author perceives two areas that require exploration: further disaggregation with regard to educational sectors and the introduction of income discriminants within the population sectors.

General Applicability

Although the enrollment projection model as described is case specific, its conceptual basis is applicable to analogous organizational or geographical structures. The experience has indicated that, in spite of informational deficiencies, it is feasible to formulate a model that incorporates a variety of demographically differentiated population sectors, with their uniquely characterized patterns of participation in different types of educational activities. Such a construct is of particular utility in evaluating the impact of prospective change. It is suggested that the need for such appraisals is likely to increase in the future, as the educational community devotes greater attention to widening its accessibility to population sectors beyond those traditionally associated with the collegiate experience.

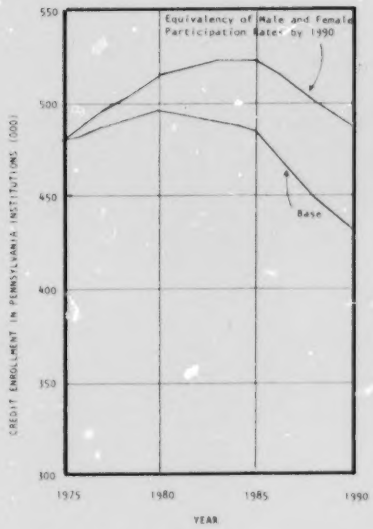

Figure 3. Impact upon enrollment projection from demographic model from assumed equivalency of male and female participation rates by 1990.

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COMPUTER CARTOGRAPHY: A NEW TOOL FOR INSTITUTIONAL PLANNING

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Planners on college and university campuses show increasing interest in the geographical areas being served by their institutions. In the late 1960s, administrators discussed ways to curtail enrollments that exceeded campus resources. Now, in contrast, brief ads on TV and radio reinforce hard-sell mail and magazine enticements to students. With increased or stabilized enrollments in 1976, forecasters question what Lyman Glenny predicted: "What we can be sure about, however, is that enrollments as a whole are not likely to increase after 1977-78, and that for 10 or more years thereafter they will inevitably diminish" (1972, p. 43). Given these dynamics of enrollment, computer cartography, or computer mapping, appears to be an excellent new tool for the spatial analysis of campus service areas.

The speed and accuracy of the digital computer allows planners to analyze geographically distributed phenomena in ways heretofore infeasible because of limitations imposed by hand computation. For several years, computer cartography has received widespread acceptance in disciplines outside education. Most notably, using census data, city planners and geographers have mapped changing residential developments and traffic studies of delivery and routing problems in cities like Chicago (Davis, 1972; Peucker, 1972). Interestingly enough, the computer cartography program discussed in this study, Synagraphic Computer System (SYMAP), has been refined and tested in the field of architecture (Dudnik, 1971).

Educators have only recently begun to explore the full implications of computer cartography. In 1972, McIsaac, Costa, Spuck and Van Dusseldorp discussed the application of geocoded data to educational problems in the Milwaukee Public School District. Their areal analysis focused on redistricting to minimize overcrowded schools, identifying areas of economic deprivation eligible for ESEA Title I money, and providing support data for new school construction sites.

The Los Angeles Community College Data Project represents the only instance of geocode analysis, and SYMAP specifically, found in postsecondary education (Cherdack and Landini, 1974; Landini and Bannister, 1973). As one part of the project, Landini and Bannister developed computer-generated maps depicting the geographic origin of students attending the eight colleges in the Los Angeles Community College District. Additionally, using census data, they developed socioeconomic maps to help determine residence locations of disadvantaged persons. Three technical tools were employed in map generation: an address coding guide (ACG), a method for recording on computer tape geographical codes for an urban map; ADMATCH, a package of user-oriented computer programs and documentation to assist in the assignment of geographic codes to computerized data records containing street addresses; and SYMAP. Aside from the mechanics of map development, written documentation from the project is extremely helpful in postulating alternative uses for computer maps. Cherdack and Landini suggest that maps can help decision makers identify the need for specific programs by mapping employment patterns, identifying the service areas of colleges to eliminate unneeded student crossovers among institutions, aiding in site selection for new campuses, and providing valuable data to document specially funded areas for grant proposals.

Unfortunately, these limited ventures into educational computer cartography fail to fully explore a simplified approach to SYMAP and to discriminate among levels of computer-mapping applicability for planning. This study proposes to remedy these shortcomings. A detailed application of SYMAP to the service areas of a large metropolitan junior college is discussed. Two facets distinguish this approach from earlier educational applications: First, zip codes represent the unit of geographical analysis rather than extensive merging of data files, and, second, three alternative applications of the tool are suggested.

At the simplest level of application, SYMAPS can visually depict student origination locations within the college-service area, eliminating the need for ubiquitous pin or dot maps that are time consuming, costly and ambiguous. At the intermediate level, SYMAPS enables a planner to consider primary or secondary catchment areas of students attending the college and thus to compare different service areas. Finally, SYMAPS can assist in determining potential pools of students by making it possible to compare maps showing the geographic origin of current enrollees with maps of socioeconomic data.

These three uses of SYMAP will be discussed in detail following a brief introduction to the SYMAP program and a step-by-step outline of the application of the tool to the junior college in this study.

The SYMAP Program

The SYMAP program is available to a wide audience in postsecondary education through extensive documentation now available from the Laboratory for Computer Graphics and Spatial Analysis in the Graduate School of Design, Harvard University (Dougenik and Sheehan, 1975). Hardware requirements for this large computer program (5,000 cards plus FORTRAN) are well within the means of most computer centers: a medium-sized computer—at least 225K—and a line printer. For centers with small memory computers, planners may want to explore the scan-line approach developed by Scripter (1969) that uses an algorithm embodied in a FORTRAN program of 114 statements

122

and a core space of 8K. Using card input for SYMAP, the generated maps display spatially dispersed data of variable darkness.

Three basic mapping routines are available in the program: the conformant map, the contour map and the proximal map (Dougenik and Sheehan, 1975). Although one may wish to experiment with all three types of map, the investigators in this study developed contour maps because they seemed to best portray visually the continous data by connecting all zip code and census areas having the same value.

SYMAP also provides data packages to create user-specified maps. For generating the contour maps in this study, the A-Outline, B-Data points, E-Values, and F-Map data packages were used. Since the contents of each package can be discussed meaningfully only in reference to specific map output, these packages will be explained later.

Steps in Map Development

A large metropolitan junior college used SYMAP to provide additional data for planning decisions. This junior college, housed in one building in the central business district, has undergone phenomenal growth in the last few years. The FTE enrollments increased by 11.1 percent between 1974 and 1975 (Oklahoma Higher Education Report, 1975). In the fall of 1975, students were turned away for lack of space.

In past years, the institution used tabular data and a "dot" map to display visually where the student who attended the college lived. Since there were four types of students–parallel or transfer, vocational-technical, day students, and evening students–the first objective of this study was to produce accurate visual displays of the service area of the institution. A total of five maps were developed, with the fifth map representing the geographic origin of all students. Next, a more sophisticated analysis was needed to determine what differences, if any, existed between primary and secondary catchment areas–high density areas–of two or more types of students. For example, were the vocational-technical students drawn primarily from different areas than the evening students? For this step, simple map comparisons of primary and secondary catchment areas were conceived.

Since the downtown campus faced burgeoning enrollment, there was a need to establish an extension or satellite campus center in the metropolitan region. Institutional data suggested that the vocational-technical enrollments had grown considerably and that an extension center should meet this growth area. Furthermore, the northeast sector of the city was suggested as an ideal location to tap potential technically oriented students. Two criteria for the extension center became apparent: (a) that such a center be located within easy commuting distance from currently enrolled voc-tech students and (b) that the area–at least by the standards of low income and low educational levels–hold the possibility of drawing potential vocationally oriented students. In response to these criteria, two research questions were drafted: Does the college currently attract vocational-technical students from the north-northeast sector of the city–and, therefore, students within easy communting distance of a new facility, and does the socioeconomic status of that area indicate potential pools of voc-tech students?

To meet the three broad needs of the institution–identifying current service areas, high density areas, and the geographic placement of an extension center–the development of five SYMAPS of current enrollees and two socioeconomic maps of income and educational level were required. The use of zip codes as the geographic unity provided a simplified approach to SYMAP, one also well within the limits of information available on most campuses. A description of the procedure follows:

Step 1: The A-Outline package of SYMAP calls for the definition of the study area or map area in which data values will be displayed and interpolation take place. In this study, the investigators obtained a large zip code map of the metropolitan area. Using a grid reference sheet, a list of vertices (X and Y coordinates) were identified in a clockwise direction for the outline of the metropolitan area, noting where the outline changed directions.

Step 2: B-Data points are required for contour maps to specify the locations with data values. For this study, it was decided that zip codes rather than street addresses or counties would serve as appropriate geographical identifiers since they defined an adequate area. Furthermore, zip codes are easy to obtain and do not necessitate the extensive recoding required by other geographical units. Next, the approximate center for each zip code was determined and the X and Y coordinates plotted using the grid reference sheet. For the socioeconomic maps, the center of census tracts was used for the coordinates.

Step 3: The E-Value package of SYMAP associates data values with each data point. The junior college computer center provided cards indicating how many students resided within each of the zip code areas. These cards were divided into five decks–all students, parallel students, voc-tech students, evening students, and day students. These values (the number of students in each zip code area) became the data values associated with the geographic X-Y data points. For the socioeconomic maps, the data values associated with each X-Y census tract were taken from the 1970 Census of Population (U.S. Bureau of the Census of Population).

Step 4: In the SYMAP program, thirty-eight F-Map electives are available for use depending on the map output desired. The F-Map package enables a user to specify the precise form of the printed output. The most important specifications include the size of the map, the number of value-class intervals, the range of values–maximum and minimum–and a general labeling of the maps. For this study, the largest map, with a width of thirteen inches, was specified for current enrollee data, while the socioeconomic maps were nine inches wide. Six levels of density were specified for most of the current enrollee maps and five levels for the socioeconomic maps. These levels and the range of each level appeared in the legend accompanying the map. General background information was also added to describe the map to a viewer.

Sample Output and Discussion

Due to limited space, only the output related to vocational-technical students will be discussed. Also, only a brief treatment of analysis for each figure will be made.

To accurately portray the areas being served by the

institution, geographic maps were produced. Figure 1 presents a sample geographic origin SYMAP for vocational-technical students enrolled in the junior college for the fall of 1974. A transparency overlayed the map indicating streets, zip code areas and a major river. An accompanying legend, not shown in this figure, identified six levels of density based on 50-student intervals. The darker the symbol on the map, the greater the number of students attending the junior college from a particular area. As one can see, the highest concentration of vocational-technical students is in the central part of the metropolitan region.

By tracing the boundaries of the most dense areas of students on the geographic-origin maps, one can note differences in the primary and secondary catchment areas of students. Figure 2 presents such an analysis comparing catchment areas for vocational-technical and all students. It can be seen that the primary catchment areas for vocational-technical and all students are similiar, both groups being drawn primarily from an area just south of the central business district. However, an analysis of secondary catchment areas shows a different trend. More vocational-technical students are drawn from the north-northeast sector of the city than all students. This finding suggests that a northeast-based satellite campus may be within minimum travel distance from a large group of vocational-technical students.

Using census tract data, Figure 3 presents a SYMAP which indicates the median income of families living in the metropolitan area. Particularly in the north-north central portion of the region, one finds low-income families—roughly from $7,000 to $10,000 per year. Referring to the symbols below the map, the numbers

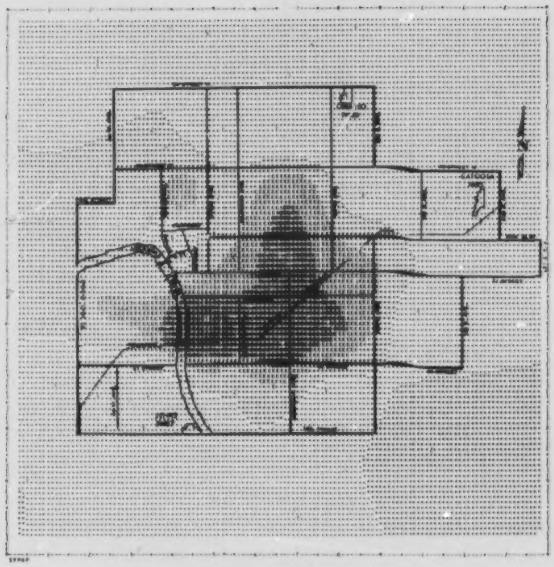

Figure 1. SYMAP for Voc-Tech students enrolled in junior college with overlay.

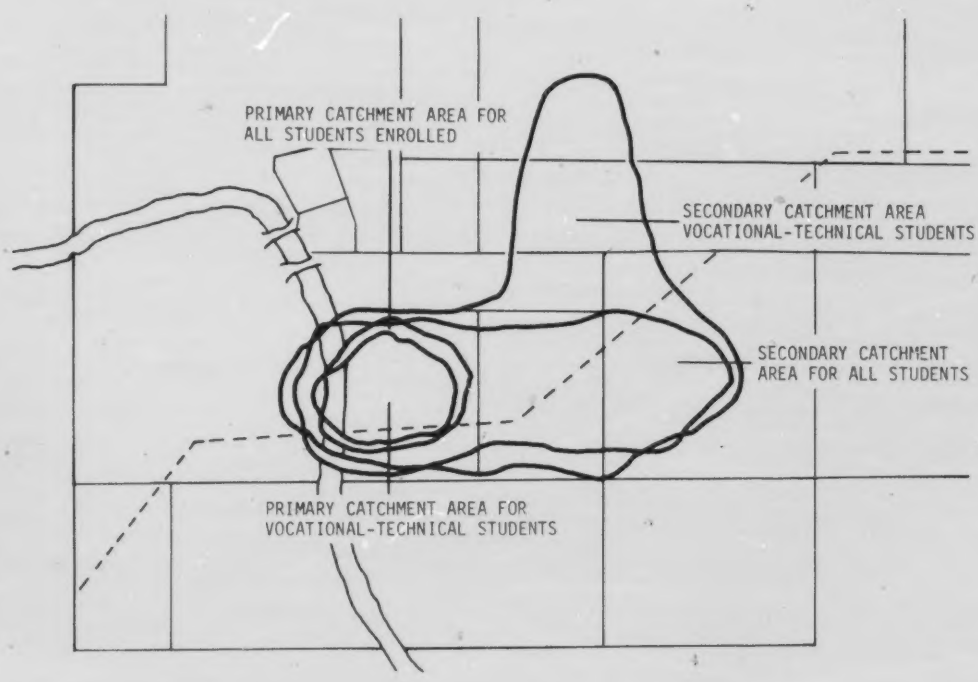

Figure 2. Map comparisons of primary and secondary catchment areas of Voc-Tech and all students.

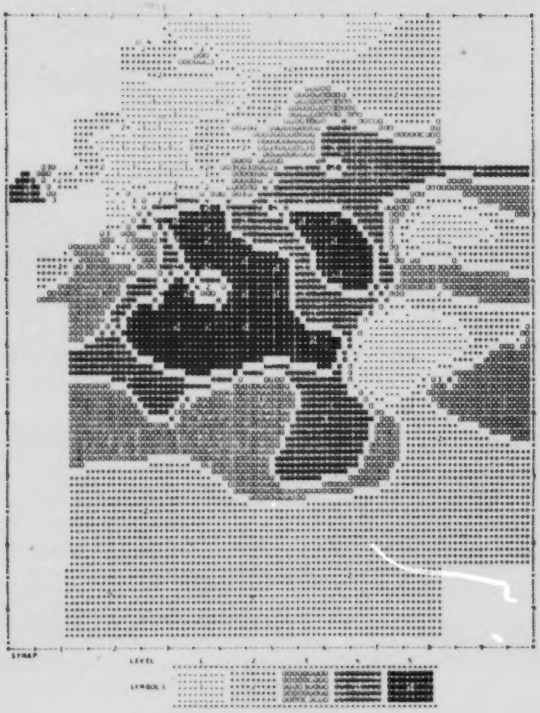

Figure 3. SYMAP of median income using census data with partial legend.

relate to annual family income as follows: 1 = $0-$6900, 2 = $6900-$8700, 3 = $8700-$10,200, 4 = $10,200-$12,900, 5 = $12,900-$23,600 and above.

At this point in the analysis, if one were to place the geographic-origin map of vocational-technical students and the secondary catchment configuration next to this median-income map, a visual inspection would assist in determining whether a satellite center should be located in the north-northeast sector of the region. Referring to the criteria for locating the center mentioned above, it does appear that the northeast sector would minimize the travel distance of the vocational-technical students as well as draw potential vocationally oriented students from low income neighborhoods that are likely to provide vocational-technical students.

Conclusions

Alternative uses of SYMAPS seem limited only by the interest and availability of spatially defined data. Such uses, however, are not intended to displace other valuable data that contribute to a decision. But they do cast data in a lively form, a visual form, an alternative to the ambiguous tabular data that often confronts a decision maker.

This study suggests that cartography, specifically SYMAP, is within the capability of most institutions. With the format which has been shown, SYMAP can be used at increasing levels of sophistication. Furthermore, the use of zip code areas as the unit of geographical analysis greatly simplifies map development. Using the approach taken in this study, junior and senior colleges should examine computer cartography as a new management-planning tool.

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A RESOURCE ALLOCATION MODEL FOR THE OREGON STATE SYSTEM OF HIGHER EDUCATION

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Determining levels of support for public institutions of higher education promises to become an increasingly complex and sensitive issue in the approaching decade. Three primary pressures combine to exacerbate this situation. First, the inexorable rise of inflation invariably outpaces the ability or willingness of a legislature to recognize cost-of-living considerations in annual appropriations. Second, the well-publicized predictions of decreasing enrollments discourage significant new commitments to educational institutions now, while alerting campuses that they may soon face mandates to contract in size at nearly the same rate as they expanded a decade earlier. Finally, and no doubt of greatest importance, there is a growing concern that higher education cannot in good conscience continue to command such a large proportion of a state's general revenues in the face of unprecedented demands for social services and continuing deterioration in the finances and environments of urban centers.

Subsidiary to the matter of determining what share of a state's general funds will be devoted to higher education is the problem of apportioning such resources among the various institutions themselves. To the extent that the total higher education appropriation reflects the original budget requests of the individual institutions, this secondary process may be rather straightforward. Commonly, however, considerable analysis and manipulation may be required to determine equitable allocations of an underfunded total appropriation to the various institutions. Such procedures are certain to become the more prevalent mode of operation in the next decade, and this paper reports on the efforts of the Oregon State System of Higher Education to establish rational mechanisms for such a process.

Committee on Resource Allocation

The Oregon Department of Higher Education oversees a small but extremely diverse system of institutions. The Oregon State System of Higher Education (OSSHE) comprises three universities, three four-year colleges, a technical institute, and a medical-dental health-sciences complex. There is furthermore, great diversity even among the three universities. Oregon State University is the state's Land Grant and Sea Grant institution, with strong research programs in the professional schools and close relationships with federal and statewide service units. The University of Oregon, also a major research university, has particular strengths in the liberal arts and sciences. Portland State University is an urban university, whose special mandate emphasizes programs appropriate to its location. Oregon's vigorous adherence to a long-established principle of program allocation in higher education assures preservation of the diversity of institutions and institutional missions within the state system. Although such a policy has largely prevented program proliferation and inefficient duplication of offerings, the highly differentiated nature of the various institutions has considerably complicated the evaluation process by which the needs of individual institutions are identified and their relative merits determined.

The funding for each of the OSSHE institutions derives from an allocation, made by the Department of Higher Education, of the biennial lump-sum legislative appropriation to higher education. The procedures used in determining the funds to be allotted to such a heterogeneous group of institutions are of necessity complex, and have been a source of considerable concern and frustration to institutional officers. In particular, campus administrators have increasingly criticized the existing procedures for their tendency to accommodate, and thereby perpetuate, perceived historical inequities in the distribution of resources.

To address this fundamental issue, the Department of Higher Education called for the formation of an inter-institutional committee to develop new procedures by which resources might be more equitably allocated among the OSSHE institutions. The committee comprised three spokesmen from each institution broadly chosen to represent virtually every facet of university operations. The resulting diversity of expertise and experience within the committee proved more than compensatory for the difficulties in arranging logistics and overcoming the inherent unwieldiness of such a large group.

At its first meeting, in May 1974, the committee took a major step in redefining the scope of its charge. Although originally formed to address the issue of equitable resource allocation anong the OSSHE institutions, a persuasive case was made that any rationally conceived and fiscally sound procedure for resource allocation should be equally useful and valid as a basis for resource acquisition from the legislature. It was resolved, therefore, that the committee's goal should be the specification of a set of procedures and mechanisms to satisfy these dual purposes. In recognition of this, the committee was named the Committee on Resource Acquisition/Allocation (CORA/A).

The Approach

As was required of all state agencies, the Oregon Department of Higher Education had historically submitted to the legislature a biennial budget request consisting of a base budget supplemented by a work load increase component and a program improvement component. Work load increase requests for higher education during the rapid expansion of the 1960s were computed on a cost-per-student basis and were then incorporated

into the base for subsequent budget submissions. In more recent years the legislature, frustrated by the complexities of adjusting higher education appropriations to now dwindling enrollments, moved substantially to a cost-per-FTE-student basis for determining their authorized expenditure levels. The Department of Higher Education, in its effort to apportion equitably this lump-sum appropriation among the OSSHE institutions, developed a modified cost-per-FTE-student formula which incorporated some consideration of fixed- and variable-cost components of institutional expense.

It was the clearly make-shift character of the resulting institutional allocations which exposed the need for a prompt review of the department's procedures in this area. Not only did these recent allocations preserve many of the perceived inequities which had gradually evolved in the base budgets during the years of growth, but the new reliance on the number of FTE students as the principal determinant of institutional resource needs appeared to distort the budgetary realities at many institutions. For example, the predominantly part-time character of the student body at Portland State University imposed significant record-keeping and counseling loads upon the institution—resource requirements which were not reflected in its FTE student count.

The basic approach adopted by CORA/A directly challenged the use of FTE-student count as the principal indicator for resource allocation. The committee argued that different institutional cost centers generate expenses in response to a variety of work load parameters, and that a rational allocation procedure should recognize this diversity of work load measures in its assessment of resource requirements. Accordingly, each of the major budgetary functions of the OSSHE institutions was separately analyzed to isolate the principal determinants of total expenditures. The functions studied were as follows:

- -Instruction
- -Non-sponsored research
- -Extension and public service
- -Libraries and museums
- -Student services
- -Operation and maintenance of the physical plant
- -General institutional support

Of these, institutional expenditures for museums and for extension and public service appeared so dependent on specialized circumstances that the committee made no attempt to define a standardized procedure for the allocation of such funds. The committee also decided that the resource requirements of the medical and dental schools of the system were likewise too specialized to be adequately specified in an allocation model appropriate to the other OSSHE institutions. Therefore, at least for the initial development of the allocation procedures, the schools of the health-sciences center were excluded from the analysis.

The Underlying Philosophy

One fundamental property of a well-designed allocation is its ability to reflect those institutional differences in missions, roles, and physical plants which require special funding considerations. Indeed, it was the substantial failure of the existing resource allocation methodology to recognize various institutional differences, thought by some to justify exceptional funding treatment, that led to the establishment of CORA/A. The committee's decision to develop a set of allocation formulas by analyzing separately each budgetary function allowed specification of cost differentials directly related to differing institutional circumstances. However, such differentials were to be incorporated into the model only when it could be shown that the circumstance in question in fact warranted specialized funding. A corollary to this approach emerged as one of the basic philosophical principles adopted by CORA/A in its deliberations: that institutions should be provided with equal pay for equal work regardless of their overall role and mission in the State System of Higher Education. Moreover, where it could be demonstrated that additional resource requirements existed by virtue of specific activities unique to an institution or subset of institutions, such needs would be recognized by explicitly including these activities in the model along with appropriate work load parameters and cost standards.

A second basic principle underlying the CORA/A deliberations concerned the development of cost indices to accompany the work load measures identified for the model. Three alternatives existed for the specification of such unit costs: the use of system-wide historical cost averages, the development of normative cost standards, and the analysis of cost data from comparable institutions external to OSSHE. It was decided that historical cost data were to be avoided whenever possible, since their use might well serve to perpetuate the very inequities in funding that CORA/A was seeking to redress. The development of normative costs, while conceptually the most desirable course of action, was considered an unrealistically ambitious task for such a committee and was certainly infeasible within the limited time available before preliminary results would be needed. Therefore, the use of externally derived cost data was adopted as the principal costing methodology in the CORA/A model. In making this decision, it was well recognized that the credibility of the funding formulas would now depend considerably on the validity of the external comparisons. This, then, makes the ultimate applicability of the resource allocation model contingent on the eventual wide-scale implementation of such efforts as the Information Exchange Procedures project of the National Center for Higher Education Management Systems (NCHEMS) and other organized attempts at systematic data exchange for higher education. Under the assumption that data will eventually be available from a sufficient number of essentially comparable public institutions, the committee was confident that valid measures would emerge for the average unit costs needed in the CORA/A model.

A third fundamental premise in the development of the CORA/A model was closely tied to the decision to use externally derived cost standards. The committee was very aware that the indiscriminate use of national-average-cost data could, carried to extremes, result in each OSSHE institution becoming a nondescript, national-average institution. Therefore, while it was agreed that the use of national cost averages applied over all aspects of institutional operations might yield valuable guidelines for total budget norms, the committee explicitly stated its concern that a wide degree of institutional autonomy in the intra-institutional disbursement of funds be recognized in the funding procedures. Only through such provisions of flexibility could each OSSHE

institution continue to stress the programs most appropriate to its missions and to make the most effective use of the total resources made available to it.

These three basic philosophical cornerstones of the CORA/A modeling effort—the principle of equity, in which institutions are differentially funded only in specific areas where documentable differences in resource requirements can be demonstrated; the principle of external standards, in which average-cost indices are derived from analyses of comparable institutions throughout the nation; and the principle of institutional autonomy, in which line-item accountability in resource allocations is discouraged in order to allow fullest expression of individual institutional goals and priorities—established the framework within which each of the budgetary functions was analyzed and then modeled.

Components of the Model

The remainder of this paper briefly describes the separate components of the model and indicates the work load measures developed to drive the resource allocation formulas. A detailed presentation of the complete structure of the model is available from the author.

Instruction. The formulas for the instruction function identify seven sources of expenditure: instruction per se, coordination of instruction, administrative and clerical support, technical support, staff development and in-service training, services and supplies, and other expenses (such as equipment acquisition and replacement). The bulk of instructional resource requirements are generated by instruction per se, comprising the personnel expenses for direct teaching activities.

It is fairly well accepted that the student credit hour constitutes the most appropriate work load indicator for teaching activities. It is equally acknowledged, however, that a realistic allocation model must allow for differing costs for student credit hours taught in different disciplines and at different levels of instruction. Mindful of the intention to use external data to establish cost standards for the model, the committee chose the HEGIS classification of disciplines as the vehicle most likely to yield comparable data. To minimize problems of different institutional contexts and varying departmental emphases, as well as to insure reasonable statistical validity, disciplines were aggregated to the two-digit HEGIS level (i.e., xx00 classification numbers). This, then, yielded 24 major subject classifications (excluding the two-year technology disciplines appropriate for Oregon Institute of Technology) for which student credit-hour cost data is to be collected.

To further differentiate costs by level of instruction, a compromise was necessary. For undergraduate students, the committee agreed that *course level* constitutes a valid determinant of differing resource requirements within a discipline. For graduate students, however, certain significant additional work loads (particularly in regard to advising and evaluation) are imposed on the institution independent of the particular course loads of such students. Thus, for graduate students *student level* was identified as the relevant indicator of resource needs. Accordingly, each student credit hour generated is to be labeled not only by its two-digit HEGIS designation, but also classified into one of four distinct categories: undergraduate student, lower division course; undergraduate student, upper division course; graduate student, fewer than 45 graduate credit hours; graduate student, more than 45 graduate credit hours.

This procedure establishes a 4x24 = 96 element classification by which student credit hour costs may be differentiated. The model establishes these costs by obtaining from a group of external comparable institutions a complete set of productivity ratios (that is, number of student credit hours per FTE faculty member for each discipline and level), from which a formula faculty size may be calculated. The resulting FTE faculty requirements are transformed into salary requirements by first partitioning the faculty into ranked and nonranked (predominantly graduate teaching assistant) faculty components by discipline, and multiplying each component by its associated average-salary level at the comparator institutions.

Having by these means established a total faculty FTE and total salary requirement, the model then calculates allocations for the remaining elements of the instruction function as mathematical functions of these two parameters. It is, perhaps, important to emphasize here how the three basic principles underlying the CORA/A modeling effort are reflected in the instruction function model. The principle of equity implies that, unless otherwise justified, all institutions should receive the same resources for the same instructional tasks. So, for example, a four-year college should be allocated the same resources to teach lower division history as a major research university would receive. To the argument that a research university needs more resources to carry out the additional functions required of its faculty, CORA/A would respond that these additional needs arise, by and large, in conjunction with the existence of graduate degree programs. Accordingly, such additional resources are included as part of the allocation formula for graduate student instruction (as well as in the formula for nonsponsored research). The research universities also pointed out that the research talent required of their faculty is reflected in higher salary levels than exist at the four-year colleges. The committee accepted this argument that the market conditions establishing these differentials must be recognized, and so they incorporated a salary-average differential between the universities and the colleges, while still maintaining equality in staffing levels and other support.

The reliance placed on external standards in the instruction model is obvious, but less clear is the important role played implicitly by the principle of institutional autonomy. This concept argues that after a total faculty FTE and total salary pool has been established for an institution, the institution should be free to staff its departments and to remunerate its faculty however it chooses within the overall totals. The model allocates sufficient resources to adequately staff all disciplines, but the concern of CORA/A is that each insitituion then be permitted to establish special strengths in chosen disciplines and to maintain emphasis on programs central to the institution's missions and role in the state system.

Nonsponsored research. The model establishes a modest level of general fund support for research activities. The allocation is calculated as a percentage of

the total allocation to the instruction function, and its level is set by comparison with the group of external comparator institutions.

Academic support. The formulas for the academic support function identify six sources of expenditure: library holdings, library staffing, library acquisitions, library binding and other operational costs, audiovisual services, and museums and galleries. The library formulas are based largely on the Budget Analysis System for Libraries, developed in the state of Washington. This system determines holdings, staffing, and other library expenses at an institution as a function of the number of faculty members, student count, and the number of different degree programs offered at the undergraduate and graduate levels. The model comprises a set of normative formulas and, therefore, places no reliance on external comparative data.

The formula for audiovisual support identifies through external comparison an allocation for this activity as a percentage of the total allocation for the instruction function. Museum and gallery support, separately negotiated for each institution, is not a formula expense item.

Student services. The student services function consists of seven categories of activity: student administrative services (including records and admissions, and student information systems), student financial aids administration, placement, student personnel programs, foreign student programs, programs for special populations, and support for the student union. CORA/A's efforts to develop resource allocation formulas for these activities have been hampered by inconsistent accounting practices within the OSSHE institutions and by scarcity of comparable data from external institutions. Until such a comprehensive model can be formulated, an interim student services allocation model has been adopted which addresses three categories of expenditure: programs for special populations, general fund support for student educational activities, and other student services. This last item constitutes the major portion of the student services allocation and is calculated as a function of the number of four-term cumulative head-count students.

Physical plant. The formulas for the physical plant function identify nine sources of expenditure: building maintenance, plant rehabilitation, janitorial services, grounds maintenance, campus security, utilities, utility distribution systems, campus delivery service, and physical plant administration. As was the case with academic support, the physical plant model is based largely on formulas developed in Washington; they are normative and require no external comparative data. The work load measures for these formulas include such commonly used parameters as net square feet, acres of ground, and building construction material.

General institutional support. General institutional support includes such activities as executive management, fiscal operations, personnel services, logistical support, and similar administrative services. As is the case with student services, however, the detailed modeling of this function has been deferred pending the reorganization of institutional accounting procedures and the availability of external comparative data. An interim allocation formula for general institutional support recognizes two sources of expenditure in this function: fixed assessments by other state agencies and institutional support activities. The latter item is modeled by a two-part formula based partly on the total head count of students and staff and partly on total expenditures by the institution.

Conclusion

The CORA/A model, as this paper has no doubt conveyed, is far from static; formulas are still being developed and tested against funding realities in the State of Oregon. At least two of the functional areas, namely student services and general institutional support are represented by formulas that are explicitly interim in nature, and the reorganization of accounting procedures necessary to more accurately model these functions is now underway. Furthermore, it is recognized that not all data elements called for in the CORA/A model are necessarily under organized consideration for systematic collection, and efforts are being made to solicit cooperation in making such information available. It is anticipated that some form of CORA/A will be maintained on an indefinite basis to further refine allocation formulas as circumstances warrant.

Despite the unpolished character of the present formulation, the CORA/A model in its conceptual form has gained unanimous endorsement from the chief executives of all OSSHE institutions as an acceptable vehicle for the rational and equitable allocation of resources within the state system. Moreover, the candid and introspective dialog, both among and within the OSSHE institutions during the negotiation of details to be included in the model, has opened communications and has occasioned insight and understanding that may alone have justified the CORA/A effort.

COPING WITH ENERGY AT CALTECH

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The terms energy crisis, energy crunch, and conservation of energy, are becoming pretty worn and tattered. The education industry, of which colleges and universities are a major part, might have gotten a little tired of those terms, as well, except for the fact that those in the education industry are free thinkers interested in principles and concepts. In the day-to-day world, they go around like most everyone else, buried in their own problems of education and research. Heaven forbid that anyone should disturb their environment—it might disturb their ability to create. And, frankly, as director of physical plant at a heavily research-oriented institution, I was quite concerned about how I should accomplish my mandate for energy conservation without having a significant impact on that environment.

This discussion will, of course, cover a number of practical methods of conserving energy, but mostly I want to share some of my experiences in conserving energy without degrading the environment for creativity and research. The key to successful energy conservation anywhere is the motivation of people.

Caltech's energy conservation program began officially with a financial impetus in October 1973. Our rate for electicity had increased 30 percent in the preceding six months. The Physical Plant Department, as the custodian of the utilities operation, had been advising the administration of the rapid rise in electrical rates. The Physical Plant Department and the Finance Office had analyzed and projected costs and had concluded that the increased costs should not be tolerated. Consequently, the president put out a letter to the entire campus describing the situation and the impact it could have with respect to salaries, equipment, supplies, and so on, in an educational institution with relatively fixed income. The letter also made some suggestions as to methods for conserving energy, such as reduced ventilation hours and reduced lighting. In fact, a goal was established that called for a one-third reduction in lighting wattage for a one-month period.

The Physical Plant Department was faced with the task of implementing the energy curtailment program. At Caltech, where management by persuasion is more the mode than is management by direction, we immediately began an educational program to explain the methods for obtaining the curtailment. First, we held a meeting with representatives of all campus departments, both academic and service. Regarding lighting reduction, we asked them simply to encourage the individual department members to deactivate one-third of the fluorescent fixtures in their area. We felt that we had to obtain cooperation and not resistance. We decided to attack lighting first because that would be easiest, would have a visual impact, and would give a feeling of an immediate, successful response to the president's request.

A mimeographed weekly energy conservation bulletin was immediately initiated to distribute concepts and methods and to report on the progress of the energy conservation campaign. Spot surveys of buildings were made to determine the lighting reduction. The results were reported in the weekly bulletin, stressing, of course, those buildings that had reached, or were about to reach, the goal and softly needling those who had not. Where the individual departments could not, or were reluctant to, reduce the lighting level, we sent lighting teams throughout the buildings to deactivate tubes.

Concurrent with the lighting effort, we began a campaign to reduce the building operating hours. As you know, in the academic community it is difficult to actually physically secure a building and deny occupancy. The learning and research processes do not operate on a 40-hour week. However, we stressed the conservation ethic and the lessened need for ventiliation and building tempering when occupancy was low. We prepared for each building a detailed analysis of the individual heating, ventilating, and air conditioning systems, with the actual hours per day that they were operating. In this regard, diplomacy was particularly required, and the director of the physical plant personally called on the academic department chairpersons to review the operating schedules of their buildings. In every case, they suggested curtailment of operating hours, and in many cases they were more willing to conserve than other members of their departments. The overall campus reduction in operating hours approximated 25 percent. Problems developed regarding certain rooms in buildings that required temperature control or long hours. These were identified, and where cost effective, separate systems were installed to allow the main building systems to shut down.

Actually, building ventilation has received a great deal of attention at Caltech, probably more than at most institutions. We found that the electrical energy used for building ventilation was approximately one-third of the total electrical energy used by a building. It was apparent that the buildings, in most cases, could not be operated on a 40-hour week but actually required some extended operating hours. It was conceived by the chairperson of our engineering division, Dr. Francis Clauser, that, in many cases, buildings actually received more ventilation air than they needed for either ventilation or heat transfer purposes. At his suggestion and under his guidance, a test program was undertaken whereby the ventilation fan speed and, hence, the volume of air delivered was reduced by 20 percent simply by changing the pulleys and belts. Since the electrical energy used varies by the cube of the speed, this, in fact, had the tendency to reduce the electrical consumption by nearly 50 percent. This concept was tested successfully, and all major buildings on the Caltech campus have operated at a 20 percent fan speed reduction for over two years. Each of these buildings has experienced an approximate 50 percent reduction in the electrical energy used for ventilation

purposes. This concept is recommended for use on other campuses.

The key to an effective energy conservation program is widespread support by the campus community. We were moderately successful, at first, by assembling a committee made up of physical plant and departmental-operating-type personnel, all of non-faculty status. This was successful in the first stages, or six months, but, by this time, the hidden slack had been taken up. We needed faculty involvement and sanction, so I asked for the formation of a faculty energy committee. This was chaired by an academic department chairperson and composed of faculty representatives of each academic department as well as representatives of the physical plant. Now we had interested faculty members in each department who were charged with fostering energy conservation in their respective areas. This approach was very successful; they became very interested in what the physical plant had been doing and came in with a number of ideas of their own. Greater understanding of energy conservation and widespread acceptance by the faculty have continued to make our work easier.

This committee functioned effectively for one year, but it, too, began to run into certain faculty resistance which could not be easily overcome. By this time, the results of energy conservation were so impressive to the administration that, for the second year, the Energy Conservation Committee was reconstituted and broadened to include the vice president for financial affairs and the vice president/provost, who became the chairperson. With this very high level administrative support, the remaining academic resistance melted away. This committee functioned for approximately nine months and has returned the management of the energy conservation program to the Physical Plant Department. Student involvement in the energy committee was essential to obtain their ideas and support and, consequently, students were also represented on our committee.

Two very significant energy conservation concepts came from the members of this committee: the reduced ventilation air concept, which has already been explained, and the phantom fluorescent tube concept, which I will explain next.

One of the most far-reaching results of the Energy Conservation Committee at Caltech was the development of this phantom fluorescent tube. The device was invented by James A. Westphal, professor of planetary science at Caltech, and a faculty member of the campus energy committee. It is based on the concept that there has been a tendency, especially in new buildings, to over-illuminate non-work areas such as hallways and corridors. In conserving lighting energy, a problem arises because many of the lighting fixtures do not have individual switches and most contain two or four fluorescent tubes. Almost all of the two-tube configurations have the tubes in series so that removing either tube turns off both. This results in very spotty illumination patterns, with the further disadvantage that, although no light is produced, the fixture still draws power through the ballast. The phantom tube developed at Caltech consists of a capacitor mounted inside a glass tube that, in construction, is similar to a regular fluorescent tube. The phantom tube does not produce any light but allows the remaining tube in the fixture to function at a reduced level. It produces a lighting distribution similar to the unmodified installations. Approximately 15,000 phantom tubes are in the process of being installed on the Caltech campus. At our present electric rate and duty cycle, these 15,000 tubes will save Caltech approximately $100,000 a year, or will pay for themselves (including installation) in about one year.

We have found that a most effective program for installation is to make a lighting survey of each building. In Caltech's case, students were used to develop empirically an installation pattern which would result in the FEA standards of illumination (for example, 50 footcandles for normal work areas, 10 footcandles for corridors, and so on).

The report of this survey is presented to the department using the building. After their concurrence is obtained, a team of custodians on the second shift proceeds to make the changes. The building occupants are asked to be tolerant and to give themselves time to become adjusted. Normally, there are a few additional changes, but these amount to no more than 5 percent. Even though approximately 25 percent of the tubes had earlier been removed, we have found a further reduction in electrical light consumption after the phantom tube configuration is installed. Although, for an individual fixture, the results may seem significant, remember that the installation will pay for itself in about one year. It is our practice that energy conserving projects that pay out in three years or less are deemed cost effective. All of Caltech's energy conservation projects meet this test.

Those institutions that have central heating and cooling plants, where electrical generation is not already incorporated, might want to look carefully at the concept of utilizing waste heat. It is comparable to the total energy concept and can be cost effective, depending on individual fuel and electrical requirements. We at Caltech found our electrical power utility amenable to having the campus generate a portion of its power itself. Most utilities are having significant problems in meeting the generating capacity requirements of their customers and may welcome some relief, although a few years ago they were not so interested. In Caltech's case, it turned out that this concept of electrical generation was only marginally cost effective and was unsatisfactory from an ecological viewpoint since emissions into the atmosphere could not be reduced below the current level. But, it is a significantly more efficient concept and, therefore is, in the broad term, conservation; where emissions are not as critical as in the Los Angeles basin, it may be a feasible conservation method.

Conservation of utilities, of course, is not limited only to electricity and fuel, but also includes water. Water has been used as a heat sink in many of our laboratories and has been wasted to drain. We have installed water limiting relays and have begun design of heat rejection systems for buildings with significant numbers of wastewater systems. Our landscape irrigation, besides being controlled by timeclocks, is monitored by moisture sensors to prevent irrigation unless absolutely required. We have even gone so far as to connect the flushing cycle of our urinals to the light switch in the restroom. Water limiting devices for showers are also a worthwhile consideration.

I would like to review some other individual steps which were taken during Caltech's conservation efforts.

As mentioned earlier, we first wanted to obtain a noticeable impact through conservation, and we concentrated on lighting, both interior and exterior. We did the obvious—put stickers on the light switches saying "Turn Off the Lights" or "Saving Energy Makes Cent$." We gave the custodians the authority to turn off lights in unoccupied classrooms, and so on. We put timeclocks on lights and on air conditioning systems where they did not exist, and we used photocells—anything to automate and remove much of the human variable from energy conservation. We did everything we could to keep energy conservation before the campus community. We erected a campus electric meter display on the most heavily traveled pedestrian route on the campus. The display was updated monthly, and we kept track of the reduction in electrical energy consumption. That meter still exists and it is still effective. We have mounted an advertisement for our phantom tube which says, "Have Caltech's new phantom tube installed in your office or lab."

Concurrent with the more visual energy conservation steps, we began to attack those behind-the-scenes energy users. Teams of students were recruited to make surveys of the energy used in the buildings during the night. We made a 24-hour electric profile of the campus from our main electric meters and were astounded to find that the 2:00 a.m. consumption of electricity was as much as one-half the maximum daytime consumption. We knew we had a problem! We then checked the operating configuration of every piece of equipment: air conditioning systems, pumps, lights, air compressors, centrifuges, and fumehoods. We cut down the water flow in our centrally chilled water system and changed the design of a cooling tower we were building (to a two-speed fan motor so that we could operate on low speed whenever possible).

Most of these ideas you've heard before. However, there is a new report which is all-inclusive. In two volumes, it is entitled *Energy Conservation on the Campus—Guidelines—Case Studies* (Vols. 1 and 2 respectively). The reports were published by the Energy Task Force, representing the Association of Physical Plant Administrators, the American Council of Education and the National Association of College and University Business Officers. I have looked over advance copies of the reports and recommend them to you as the most comprehensive analysis of energy conservation methods for the education industry. They are to be distributed to member institutions of the above organizations.

Another innovative approach that others are using, and we at Caltech are beginning to use, is that of allowing the temperatures in our buildings to vary through ranges of about 10° instead of maintaining a constant temperature. Maintaining a constant temperature usually means supplying both heat and cooling energy simultaneously for most of the time.

You may wish to consider heating your buildings to 68° in the morning and letting the people and equipment load take over as much of the heating requirement as possible during the day. Except in the extremes of winter, the building temperature will probably begin to rise slowly during the day. Until the temperature reaches 78° no cooling needs to be added to the building, just ventilation. When it is necessary to turn on the cooling to maintain 78°, this can be done. Yes, it's a new concept. We have to sell our people on the fact that it can be a little cool in the morning and warm in the afternoon, within the range of human efficiency. For particular areas in buildings that require temperature stabilization, separate smaller units should be installed to accomplish that, but the majority of the buildings can swing, even at research institutes like Caltech.

I would like to leave you with one energy conservation concept which you may not find in every booklet yet but which has potential that we at Caltech are intending to tap. A significant portion of the volume of air introduced into a room by the ventilation fans is required for the transfer of heat either in or out of the room. Much of that heat transfer is relative to the outside environment. If it's very cold or very hot outside, there is heat transfer through the outside walls. The ventilation air quantity, therefore, is related to that required to make up for the heat transfer through the wall. Consequently, when the temperature outside is close to the temperature inside, this high quantity of air is not needed. Caltech has one building now operating with a two-speed fan system. One speed is 50 percent of the original design, and the high speed is only 80 percent of the original design since we already have reduced it 20 percent. When the outside temperature fluctuates between 55°F and 75°F, the fan speed is 50 percent—approximately one-eighth of the power required at design volume. In areas of moderate temperature, such as the Los Angeles area, we are operating approximately 50 percent of the time on the low speed with no discomfort at all to the building occupants. We are not saving electrical energy in drivels and drabs, but in bushels. I have given you a concept, but not necessarily the mechanics, of how to do it. There are various ways: two-speed motors, speed reducers, and so on. In our case, we just connected an additional small motor to the fan, along with the existing large motor. We then electrically drive the small motor, or the large motor, depending on the fan speed we want.

In summary, then, energy conservation at the research-oriented institution is somewhat more difficult than the average energy conservation situation. However, effective energy conservation is a real possibility without degradation of the educational and research environment. It just takes, perhaps, a little more innovation and a little more finesse.

MULTIPLE PERSPECTIVES EVALUATION: A STRATEGY FOR DEALING WITH CONFLICTING PRESSURES

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Evaluation of academic programs—their processes, orientation, objectives, products, and impact—is a recent and important dimension of institutional research. Given the increasing scrutiny under which postsecondary institutions operate, educational evaluation is an almost natural outgrowth of the descriptive studies and cost analyses that have characterized the field. However, much evaluation to date relies upon single or, at best, dual perspectives on effectiveness. Given the growing recognition of various interests, both internal and external to postsecondary education, this traditional strategy for evaluation is insufficient. Needed are designs that provide a rich variety of data in response to the multiple perspectives and pressures (Campbell and Fiske, 1959; Webb, Campbell, Schwartz, and Sechrest, 1966; Sieber, 1973). This paper outlines such a design by describing briefly the Program Effectiveness and Related Cost (PERC) framework developed at Empire State College (ESC) in conjunction with some other institutions. The paper then illustrates how the multiple perspectives evaluation strategy proved effective in an examination of a complex, innovative, Studio Arts Semester in New York City.

Program Effectiveness and Related Costs (PERC)

PERC began three years ago as a project to develop ways of linking assessment of effectiveness to cost analyses. Jointly sponsored by the Fund for the Improvement of Postsecondary Education, Exxon, and ESC, PERC now involves four cooperating institutions: Hampshire College, Amherst, Massachusetts; Northland College, Ashland, Wisconsin; State University of New York at Plattsburgh, and University of Wisconsin-Green Bay. The framework looks seriously at relationships between outcomes and costs for students, faculty, and programs in an attempt to learn what kinds of students change in what ways following what kinds of educational experiences and at what costs. The PERC framework has several important features (discussed in Palola, Bradley, Debus and Lehmann, 1975a, 1975b), but the one that is most pertinent for this paper is the multiple perspectives strategy.

The multiple perspectives strategy developed for the PERC framework is shown in Figure 1. It contains three key ideas: first, student learning is the focus of PERC evaluations, and thus its placement at the center of the figure; second, multiple persons, utilizing various ways of knowing and of evaluating, make observations of student learning and acquire a rich composite of diverse information that is critical to the pluralistic notion of evaluation presented here; and third, an independent or neutral research and evaluation staff synthesizes all data types and prepares useful reports for different audiences. Reports that are tailor made to audience interests maximize communication and program improvement based on research data. PERC's aim is clearly to enhance executive decision-making capabilities.

A few more details. An important concern of PERC is to utilize a variety of data collection methods. Student learning and growth is a complex process, not yet well understood, so reliance upon a single method of data collection is risky. For example, test scores provide, according to many, a reasonable estimate of cognitive achievement. But, at best, tests look at student mastery of content. It is better also to find other methods of data collection. Interviews, rating forms, survey instruments, content analysis, observation and tests are all important tools for obtaining a full picture of what is happening to students. Note that this means use of qualitative as well as quantitative techniques. The aim is to develop chains of evidence of where program impacts have occurred.

Multiple observers and multiple standards are key components to a multiple perspectives strategy. While faculty traditionally assess student learning and program effectiveness, students and others, including educational researchers, also can provide richness to an evaluation. Since effectiveness is often in the eyes of the beholder, multiple observers applying their own standards are important to informed decision making.

Overall, the multiple perspectives approach posits certain common evaluations that will be reflected in the various research techniques, as well as certain unique judgments that may reflect the particular vantage points and knowledge of a given evaluator. This approach conceptualizes the learning/teaching process as complex, interactive, and unique but, also, patterned. As a result, for certain kinds of students working with certain kinds of faculty, there ought to be identifiable common outcomes. The multiple perspectives approach should be able to reveal them. The researcher's task is then to present them in understandable and convincing ways to the variety of audiences.

An Illustration: Evaluating the Studio Arts Semester in New York

The ESC Studio Arts Semester (SAS) in New York was created in 1975 to provide an opportunity for college undergraduates from throughout the State University of New York (SUNY) to spend a semester in the arts capital of North America. The program is designed for serious, professionally oriented students and allows them to immerse themselves in their media.

The elements of the program are simple. Students live in New York City and work in a large loft space connected with the Westbeth complex on the edge of Greenwich Village. All have a personal studio area in the loft where they pursue their art interests. In addition, there are several seminars in courses at such City pro-

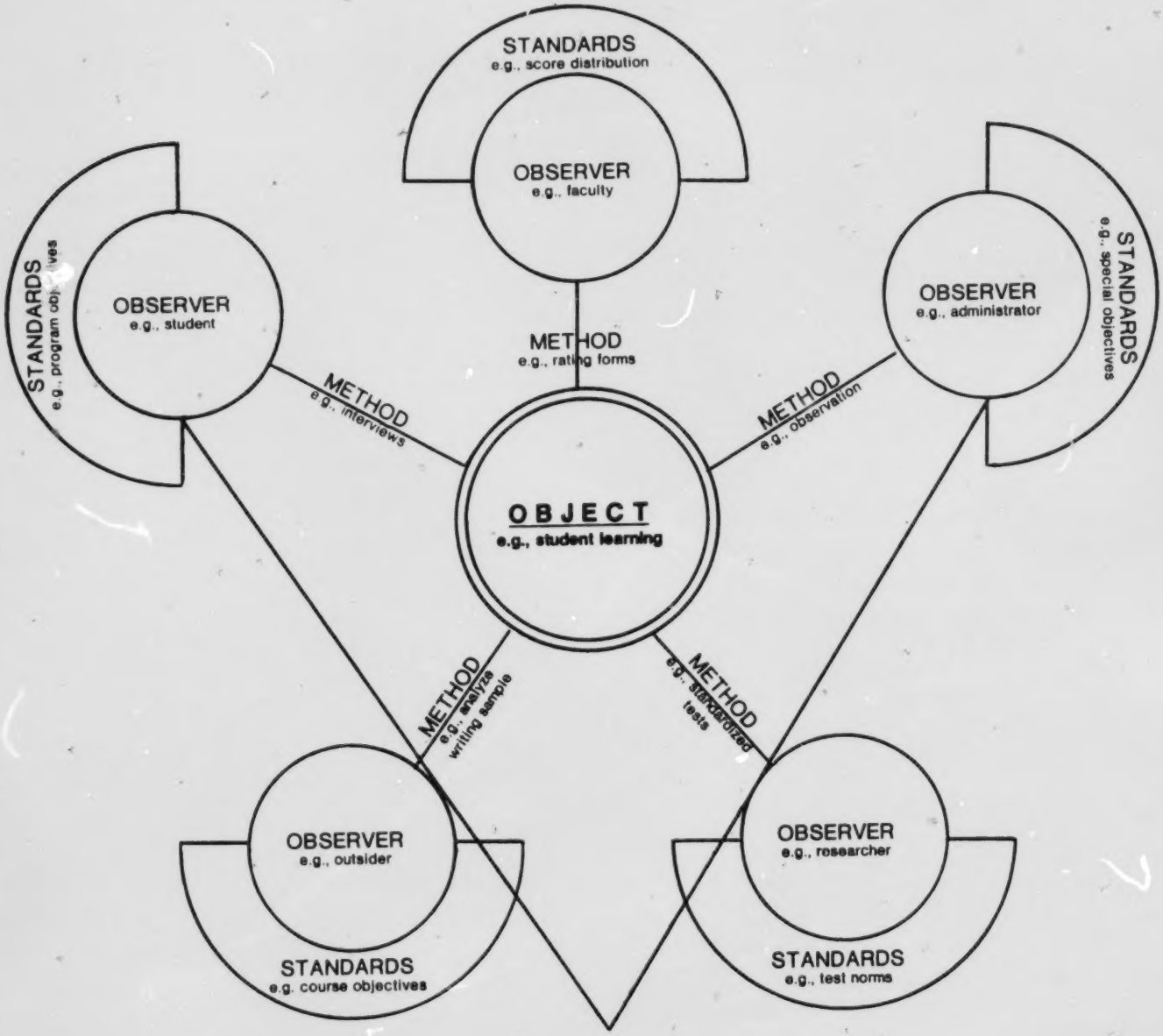

Figure 1. PERC's multiple perspectives strategy.

grams as the Chambers Street Sculptors Workshop, Westbeth Graphic Workshop, and the Baldwin Pottery Workshop. Others do apprentice work with practicing artists. However, the most important dimension of the SAS is regularly scheduled critiques in which a professional artist/critic meets on an individual basis with each student and offers encouragement, suggestions, help, or alternatives. The sessions are often intense and test the confidence and mettle of every student. Each artist/critic (there is a total of six) makes three to four visits per semester.

Program evaluation has been taken seriously by ESC since the college was founded in 1971, and PERC looks at the entire college. Thus, it was not unusual that the Office of Research and Evaluation (ORE) was asked to conduct a study on SAS during its initial term. However, there were several pressures under which the staff members worked:

Decisions were pending about SAS personnel. It was, thus, necessary to clarify ORE's role. The position taken by ORE was that personnel decisions were not part of its work. Thus, the evaluation stuck to student learning outcomes and the actual operation of the Studio Arts Program. A second pressure arose from the multiple funding base for the program. Each contributor held certain interests, and these were crucial to the contributors as well as to the success of the Studio Arts Program. Third, the relationship between the student's home campus and SAS was critical. Some art department chairpersons played a major role in determining which students participated. Students often asked about, or openly criticized, admissions criteria and the general level of development of students admitted to the painting program.

Six methods of data collection were used. The most basic was gleaning available files on enrolled students to discover such things as age, sex, and home institution. This task might have been easier if files had existed, but the combination of a new program and unclear administrative procedures led to a dearth of accurate information.

The second technique used was to personally interview students at the Westbeth loft. The interviewers sought to learn why students enrolled, whether the program fit neatly into their long-term plans, how the city was being used, what the SAS had provided that was not available on campus, perceived benefits, and problems with the program. All students were interviewed.

A third technique was to interview the program coordinator, who is a practicing New York artist, and three artist/critics. These conversations focused especially on SAS strengths and weaknesses.

A fourth aspect of the methodology was phone interviews with members of the advisory board. The Advisory Board consists of art faculty throughout the State University of New York (SUNY), ESC administrators, and personnel representing SUNY's central staff, all of whom helped create the SAS and are responsible for its progress.

The fifth technique involved a short anonymous questionnaire that utilized open-ended questions about student goals, problems, learnings, and the like. Most students (90%) completed the form. Also, students kept logs of their work activities and reactions to the program.

Sixth, the research team spent four days and two evenings in nonparticipant observation of students working, interacting, and undergoing critique. While invisibility is impossible, it seems fair to suggest that the research team was not prominent in the students' minds. Team members were simply visitors to ignore or to talk with, depending on the time, the mood, or the circumstance.

Another aspect of the study was a cost analysis that compared SAS total and per student costs with all-college figures.

Overall, the multiple methods and sources provided a rich melange of information about the SAS. This was put into an initial report, on July 30, 1975, for the advisory board of the University-Wide Council on the Arts and the ESC administration. The report contained eleven recommendations. In fall 1975, the study was replicated in shorter form in keeping with the PERC requirement of using longitudinal data whenever possible. This led to a second report in March 1976 that reviewed the disposition of the recommendation.

Findings of the SAS Report

When the Office of Research and Evaluation began its study, it seemed quite possible that ORE was merely sliding the stone over a grave. There was much confusion in and outside of the college about the SAS. There were rumors that students were floundering about and accomplishing little and, also, rumors of exorbitant cost. Some problems were identified, but the following was the major conclusion:

> Overall, we found the program stimulating and promising. The concept is exciting. The students are enthusiastic and serious. The faculty is committed. What problems that do exist are reparable. Thus, we enthusiastically recommend continuation of the Studio Arts Semester in New York City. (Palola and Bradley, 1975)

However, there were other findings.

A key dimension of the SAS is the opportunity for top quality student artists to work closely and interact with other top students. Thus, student selection is important. While it was found that all students were enthusiastic and serious, several people expressed the concern that quality was uneven. In addition, conversations with students suggested that many had taken a lot of time getting comfortable in the city before being able to use the city. Therefore, a strict student screening process that included review of a portfolio was recommended. It was also recommended that a systematic, but not overly directive, orientation program be given.

Problems also appeared in the critiques. Students found that the artist/critics tended to be highly subjective. As one student noted, "If your work is similar to the critic, he loves you. But if not, forget it!" While such subjectivity is a given in art, the apparent resulting disparity in amount of time spent with students is not a given in education. The disparities were heightened by the amount of work assigned to an artist/critic in a given day. Thus, we recommended more visits and clearer distribution of artist/critic workload.

Several SAS students (who were, save one, primarily painters) wanted introduction to other media and took courses and workshops in them. To stimulate opportunities for such learning, it was recommended that students with other than painting interests be recruited.

Facilities of the SAS are three: the loft, the galleries and museums, and living accommodations. The loft is a 5000 square foot area which allows 100 to 150 square feet per student. Temporary partitions of plaster board separate the students' work spaces. While students seldom complained, and even liked the loft, the critics did complain, one noting: "New York is dingy enough. The students should have some way to get away from it." Another condemned the place as dirty, poorly lit, located in a high risk area, and generally unsuitable.

Of course, the galleries and museums, the second element of facilities, are incomparable. Students have easy access to a huge variety of learning resources. However, living accommodations were a serious problem in the initial semester of SAS. A few students found apartments, a few lived in the all-female Christian Union Building, but six chose the Hotel Albert, which proved to be a cockroach infested, skid row home for all manner of rogues. Those students probably have the most to remember. The Hotel Albert is now immortalized in the loft graffiti for succeeding generations of students. The recommendation for facilities called for some tidying up of the loft, purchase of a few useful items (an electric saw for frames, a ladder, some more desks and chairs, a slop sink, etc.) and a concerted effort to identify suitable housing.

The cost analysis revealed a program that was somewhat more expensive than the normal ESC program. However, planned future enrollments would reverse this picture. Recommendations were given to consider extending the SAS, ESC's only semester program, throughout the summer, since the director is on year-round appointment and the loft space is rented on an annual basis. An evaluation of the fees paid to artist/critics to ensure that the amounts were reasonable in terms of the going rate was also suggested.

A major problem for students and the director was the lack of clarity of administrative procedures. The director felt that the budget was needed earlier, and students encountered multiple problems in trying to pay tuition and fees and initiate transfers in financial aid monies. A recommendation was made to straighten things out fast before these procedural problems destroyed the program.

A concern felt by the research staff was that several SAS students had no intention of returning to the home campus. Since the program is dependent upon the assistance and encouragement of art faculty throughout SUNY, this seemed a serious problem. Thus, a final recommendation was that considerable care be taken to ensure that home campus art departments realized suitable benefits.

While there is nothing extraordinary about the initial SAS report (which is, in fact, fairly routine in the context of PERC), it provides a clear example of the advantages of a multiple perspectives strategy. Without multiple observers, several problems might never have been identified. Without multiple methods, there would have been great difficulty in offering interpretations of the relative importance of the various recommendations. Similarly, multiple evaluators (with different standards) of the draft report helped make the final product powerful. Following are some observations from the second report (Palola and Bradley, 1976).

Impact of the Initial SAS Report

The major impact of the initial report is that the SAS continues with generally enthusiastic support from ESC and the rest of the state university. While there are still concerns, all seem convinced now that the program is serious and productive.

The SAS in fall 1975 was different from that in spring 1975 in several ways. First, there were more female students, more older students, and the artist/critics seemed to feel that the overall quality was higher. Second, the loft was more crowded as numbers increased. As one researcher found, it was a simple matter to trip on a painting or step on a tube of paint. Third, students were acclimated to the city sooner. This was reflected by the number who made arrangements for activities outside the loft: apprenticeships, courses, work with tutors, and the like. Fourth, the critiques seemed to work better.

The recommendations of the Office of Research and Evaluation helped bring about some of these changes; seven of eleven were implemented. For example, a major reason for the more rapid acclimatization was a thorough orientation program that included visits to all artist/critic studios. Several felt that this feature also helped make the critiques more helpful because they could tell where the artist/critics were coming from and interpret their responses more easily. Additional visits and use of a fixed schedule during the visits were other factors in the improved critiques. This meant that no one was left out while others received attention.

Summary

It is always presumptuous in research to claim that a report brought about great changes or helped save a program. Thus, ESC is a bit uncomfortable in suggesting this. However, what is clear is that the multiple perspectives strategy employed by ORE in looking at the SAS in New York City involved so many people in a variety of ways that the SAS became better understood. When decision time came, the various people and groups involved in the decision–Empire's president, the dean of ESC Center for Statewide Programs, the advisory board for the SUNY University-Wide Council on the Arts, the local art department liaisons–all supported continuation.

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ENROLLMENT PROJECTION STRATEGIES IN AN UNCERTAIN ENVIRONMENT

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During the decade of the seventies, higher education has encountered considerable fluctuation in enrollments. Not only have events in the past five years differed from the sixties, they have yet to chart clear patterns for the future. Fluctuation, the failure of new trends to emerge clearly, and a series of new and conflicting images of the future of postsecondary education have created a basic uncertainty about what future enrollments will be. In spite of this uncertainty, however, institutional researchers and planners are being called upon to make projections. These projections are important because they will guide today's educational decisions, which in turn will help to determine tomorrow's educational environment.

This paper has three objectives. First, it outlines some of the factors that have contributed to current uncertainty in enrollments and portrays how that uncertainty has been reflected in recent enrollment projections. Second, it identifies complicating factors that institutions must consider in projecting enrollments under uncertainty. Third, it provides a series of strategies for enrollment projection in a climate of change and uncertainty. Modified to fit each particular environment, these strategies will help institutions to cope with uncertain futures.

But can enrollment projections provide accurate predictions for the purpose of planning and decision making? Their record has been mixed, at best. The national enrollment projection studies of the sixties were based on trends in enrollment of the fifties and consistently underestimated the enrollments of the period. On the other hand, many of the projections of the early seventies were based on the trends of the sixties and overestimated the actual enrollments that transpired.

Alerted by the poor track record of enrollment projections based purely on historical trends in actual enrollments, a number of studies in the early seventies began to project enrollments based on the rate of attendance and size of the 18 to 24-year-old cohort group. The result has been the now familiar *go-stop-go* enrollment curve popularized by the Carnegie Commission. The earliest of the Carnegie projections of this type appeared in 1971 and posited increasing enrollments until the 1980s, followed by plateaus or declining enrollments for a period, and then increasing enrollments from 1990 onward.

Conditions since 1971 have caused revisions in these projections. Continuing declines in the birthrate have caused Bureau of the Census population projections that have been increasingly pessimistic. College attendance rates have declined for many traditional students. On the other hand, rates of attendance of nontraditional and adult learners have climbed, although it is difficult to say by how much due to the difficulty in identifying these learners.

The relative economic returns of education and the spectre of the underemployment and even unemployment of college graduates have led to the incorporation of these factors into enrollment projections. Just as this line of argument was being accepted, however, educators were confronted in the fall of 1975 with the largest enrollment increase since the mid-sixties. While a portion of this may be attributed to the continued growth of the 18- to 24-year-old age cohort, the remainder is due to other factors and has not been explained definitively. Many believe that due to poor economic conditions, many young people enrolled in college rather than compete for the few existing jobs. The fall of 1975 reminded educators that the relationship between economics and college attendance, while very real, is not as simple-minded as some had suggested.

In response to the high degree of uncertainty concerning future enrollments, a wide variety of enrollment studies have been developed. These studies utilize some combination of demographic trends and projections, the effects of economic saturation, changes in student attendance patterns, and assumptions about certain key educational conditions in the future. The outcomes of these studies vary considerably, reflecting the factors utilized, the assumptions made, and the methodologies of the projectors.

Figure 1 compares a sample of these projections. The verticle axis represents the percentage change in enrollments projected, based on actual 1974 enrollments. Although several of these projections deal with different definitions of enrollment in different settings, the use of the *percentage change* device enables comparison.

The three Carnegie Commission projections are presented as examples of the trend-demographic approach applied in a national setting. The 1973 Carnegie Base Projection predicts enrollments on the basis of Series E population projections and an assumption of a slightly decreasing high school graduation and college attendance rate (1973a). The Carnegie Update modifies the demography-driven base projection on the basis of the assumed attendance of larger numbers of nontraditional students espoused by the Carnegie report, *Toward the Learning Society* (1973b). The magnitude of the difference between these two projections illustrates the relative impact of the modification. The third projection by Carnegie is the most recent, appearing in 1975 in *More Than Survival*. It is based on Series F (now called Series III by the Census Bureau) population estimates and assumptions that enrollment rates for many types of students will increase. This projection foresees rising enrollments through 1985, a weak decline through 1995, and modest growth thereafter.

Hollander (1974) projects a high and low figure for full-time undergraduates in the state of New York. While this is essentially a trend-demographic study, it isolates the effect of demography on traditional undergraduate enrollments and also alludes to the impact of regional

variation. If Hollander's projections are realized, the institutions in New York State will undergo a 20 percent or greater decline in traditional undergraduate enrollments by 1990.

Dresch (1975) has been one of the leaders in attempting to link college attendance to economic rewards. His model suggests that continued high levels of college attendance will create a condition of economic saturation. As a result, the declines in enrollments that may occur after 1980 may be far more severe than those projected by Carnegie. Moreover, the posited declines may continue even after 1990, albeit at a diminished rate.

Although not portrayed on this graph, Freeman and Hollomon (1975) have investigated the impact that the recent, declining economic value of college going may have on enrollments. They suggest that the poor employment success of recent graduates will cause enrollments to peak sooner than the early 1980s, the time foretold by demography. On the other hand, they believe that the decline in enrollments in the 1980s may not be as severe as predicted because the relative economic returns of education may actually improve during that period.

A variation on the economic viewpoint is reflected in several recent projections by the Bureau of Labor Statistics (1975) and the National Science Foundation (1975). These studies attempted to project the supply of Ph.D.'s in various fields and the demand that is likely to exist. In both projections, supply is expected to exceed demand in all major fields. The suggestion is made, however, that students will modify their patterns of behavior to narrow the gap.

Not all of the alternate projections are gloomy, however. Bowen (1974) suggests the possibility that higher education may remain a growth industry, especially is lifelong learning becomes a reality. If this occurs, he suggests it is quite possible that enrollments could increase by as much as two hundred percent by 2000. This is really more of a scenario of the future than a true projection.

A further note of uncertainty is added by demographic reports from California which hypothesize that the fertility rate, after years of decline, may be on the verge of bottoming out or increasing. The suggested reason is that many couples who merely deferred marriage or childbearing are now starting their families (Sklar and Berkov, 1975). While the direct effects of such a condition would not affect enrollments until about 1995, indirect effects, such as an increased demand for elementary and secondary schoolteachers, could influence postsecondary education much earlier.

This total group of projections presents a variety of viewpoints such as educators have seldom confronted. Each projection competing for attention and support uses demographic, economic, and student choice factors in different ways, while we know that all factors are somehow operative in determining enrollments. Moreover, the impartial observer realizes that factors such as the impact of economic conditions on education have been much simplified. In addition, while it is true that adult learning will ameliorate potential enrollment declines, it is certain that all institutions will not benefit equally from adult learning. Further, while some of these projections take into account the impact of changes in educational policy, others do not recognize that enrollments are not purely deterministic. Institutions still have some capability to shape their futures.

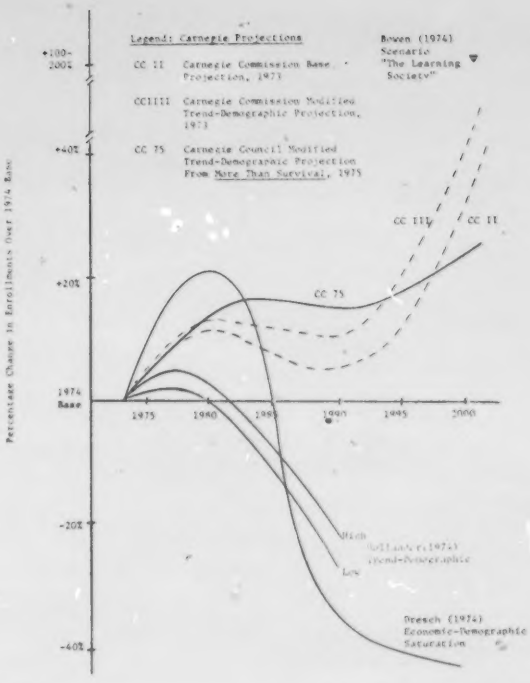

Figure 1. Variations in enrollment projections.

Complicating Factors

The plight of institutions attempting to utilize these projections is complicated by a variety of other factors. Regional variations, differing prospects of various types of institutions, changes in student preference for academic disciplines, timeliness of projections, and comparison with appropriate peers are collateral considerations that must be recognized. Every institution needs its own formula to deal with these issues. In the following discussion, examples from the University of Texas are used to illustrate the points.

Extreme regional variations make it difficult for institutions in some parts of the country to use projections based on national data. In the past, it has often been possible for institutions in the South to use events in other parts of the country as leading indicators of conditions they could expect to experience in several years. However, many observers believe that states in the so-called *Sunbelt* may expect a future that is far different from that of the northeast and upper midwest (Sale, 1976). In Texas, for example, our prospects for continued demographic and economic growth make it difficult to convince many educators that a limited growth future should even be considered.

National projections have generally not disaggregated enrollments by type, although the Carnegie Commission's *More Than Survival* is to be complemented on disaggregating enrollments and some projections by types of students and by types of institutions. Even these efforts, however, do not assist the institution in dealing with a significant characteristic of enrollment

changes in the past several years, namely, the changing student preference for different academic majors. Most institutions have witnessed an exodus of students from more traditional majors into career-oriented or professional disciplines. At Texas, for example, since the fall of 1972, we have experienced a 36.4 percent decrease in enrollments in the College of Humanities, a 27.0 percent decline in the College of Social and Behavioral Sciences (Texas does not have a single consolidated college of Arts and Sciences), and a 16.8 percent drop in the College of Education; in the same period, the Colleges of Pharmacy, Engineering, Nursing, Business Administration, and Communications have grown by 16.5, 28.4, 29.0, 41.4 and 43.9 percent respectively. Our largest major is now accounting; there are 2,350 undergraduate accountants roaming the Austin campus. Planning for these sorts of changes is equally as important as planning for the total level of enrollment.

When national data and projections are used, there is some difficulty with their timeliness. The same is true, to a lesser degree, with statewide data. For a long time, it was nearly two years from collection to publication of comprehensive national data. The National Center for Educational Statistics has taken great strides in publishing preliminary data and prepublication releases that increase the usefulness of data. We have found that our coordinating board can also be persuaded to send us rough copy of statewide data that can be used before it is hopelessly out-of-date. Informal information exchange with peer institutions yields timely data, as well.

It is absolutely essential for institutions to narrow the field of comparison by selecting peer institutions and states. It is often necessary to select for comparison different peer groupings, depending on the enrollment or demographic/economic factors under scrutiny. Often these are different from the groupings used in comparing academic standings and from those suggested by state coordinating boards for comparing other statewide characteristics, such as relative support of education. In Texas, we have found it necessary for enrollment study purposes to consider peer groupings composed of all campuses of the University of Texas System, the three or four public universities with which we compete for Texas students, and peer research universities with which we compete for graduate students, respectively. In addition, we attempt to steal a march on the future by comparing Texas' characteristics with states with which we are currently comparable and with states with which we expect to be comparable in the future.

Overall Strategies for Projecting Enrollments Under Conditions of Uncertainty

The nature of fluctuation and the uncertainty in today's enrollments, the wide variety of alternative enrollment projections that face the analyst, and the corollary factors that complicate the issue provide little comfort to those projecting enrollments. However, it is during times such as these, when fundamental changes are being effected in postsecondary education, that information about these new directions is most valuable. The following strategies make sense for these times.

First, enrollment studies under these conditions must place more emphasis on the broad-based monitoring of the host of factors that influence enrollments. In general, enrollment projections that have been accurate in the past have been those well-conceived enough or lucky enough to utilize past trends that continue into the future. Where possible, projections should continue to extrapolate existing trends. However, as part of the extensive monitoring of educational factors, these projections should actively question whether trends will continue. Where trends appear to be faltering, alternate scenarios should be suggested. However, these scenarios should provide the ingredient that was most often missing from the futurist scenarios of the early seventies: They must make every effort to demonstrate how the future will derive from present conditions, and do so convincingly.

Second, if in their planning activities institutions and states utilize modeling and analytical studies such as the projections of the Carnegie Commission, the alternate models of Dresch, or home-grown analytical techniques, they must not ascribe the illusion of certainty to the outcomes. In reality, these models are based on probabilistic assumptions about the future. The fact that the model produces "hard" outcomes must not obscure the reality that it is based on uncertain assumptions. Nor should a variety of outcomes of different techniques be taken as cause for ignoring all of them.

Third, the most valuable planning strategy under uncertainty is the one that maintains institutional options and flexibility. Projections and enrollment studies should guide the institution in such a strategy. However, maintaining options does not mean the institution should avoid making all commitments or decisions. There is every indication that temporizing may carry a heavy penalty in the years ahead, but not as heavy a penalty as poor decisions and commitments based on outmoded assumptions about trends.

Finally, it is important to reinforce Kenneth Boulding's assertion that the world moves into the future as a result of decision, not plans (Boulding, 1974). I would add projections. Projection studies must accommodate the needs of decision makers; elegant techniques alone are not sufficient. The identification of alternative futures or of levels of enrollment will not have the necessary impact unless the proper decisions are made. An option-opening stance does not connote an absence of decisions. Enrollment studies and projections must directly fuel these decisions.

These strategies point toward enrollment studies having the following characteristics. First, enrollment studies under uncertainty should recognize the probabilistic nature of events and should provide ranges of outcomes. They should also recognize that the ultimate decisions that will be made will be judgmental, diffuse, and based on a wide range of factors. These studies should include the widespread monitoring of the factors that influence enrollments: demographic and economic factors, characteristics of the student body, types of students attending, and so forth. Where used, analytical and modeling techniques should be simplified and assumptions detailed. Technical translation may be necessary to make the assumptions of analytical techniques understandable to the layman decision maker. The actual projections that are made should also be diffuse. They should be considered more as working budgets than as master plans. These projections—and the detailed monitoring of information—should be revised frequently and analyzed for accuracy and information value.

In truth, the greatest challenge in projecting under

uncertainty lies not merely in knowing how to focus the future, but in actually focusing it. Taking these strategies, applying them creatively to different educational environments, and resolving our blurred future is a complicated and never ending process. That, indeed, is the point: The process of planning under uncertainty is equally important, if not more so, than the actual planning products. The foregoing strategies for projecting in an uncertain environment should be the guiding tenets of that projection and planning process.

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GOAL-ORIENTED RESOURCE ALLOCATION FOR UNIVERSITY MANAGEMENT

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Resource allocation plays a key role in a planning process that effectively moves an organization to achieve its objectives. While managers plan for the future in many ways, the allocation of resources largely determines how an organization grows and changes. An organization may engage in excellent traditional planning, defining missions and developing strategies and, yet, fail to benefit if resource allocations do not reflect and support the plan. Alternatively, appropriate resource allocation may provide an effective substitute for traditional planning.

A variety of processes exist for resource allocation. In a highly centralized allocation process, the president may set allocations unilaterally for subunits or, even, for individuals. In a highly decentralized system, each faculty member might keep the income he or she generates and pay an overhead charge for services received from the university. both of these extremes do occur, but common practice lies in between. One premise of the authors is that both the process by which resource allocation decisions are made and the decisions themselves are important. Alternate resource allocation processes will influence the behavior of administrators, deans and department heads by giving them incentives at the margin even when the total numbers undergo little change. The focus of our interest is within private universities, but the general principles apply to public universities and other nonprofit organizations.

Centralized Resource Allocation

Many colleges and universities utilize a centralized resource allocation structure. In such a system, resources are collected at a central level and allocations are made to various subunits by the central administration. Centralized systems typically involve a bargaining process in which the deans or department heads negotiate with the president or chief administrators of the university for their allotment from the central sources of income. These negotiations can depend upon both objective and subjective criteria involving present or past performance and the perceived goals of the allocators.

Most universities continue to rely on a centralized resource allocation system for significant reasons. First, there are inherent problems in defining organizational goals and measurable objectives, especially in a nonprofit organization. The resources allocated to each area of the university reflect the implicit and subjective evaluation of the objectives and performance for that area. Second, universities need to maintain the flexibility required to adapt to a changing world. As priorities for education change, the university must be able to reallocate its resources to maintain a viable position. Third, incomes from such sources as endowment and gifts often lack any natural identification with a subunit, in contrast to tuition and research overhead. The administration can decide that each subunit will have its own endowment and fund-raising program, but such a move seriously impairs the needed ability, discussed earlier, to reallocate in order to meet changing conditions or to enhance the overall objectives of the central administration.

Decentralized Systems

Some universities operate on a "profit center" or decentralized resource allocation system. In a decentralized system, each profit center, school or department, earns income directly. This income is used by the subunit to pays its own direct operating expenses and to purchase services from other areas of the university. Administrative expenses are generally recovered through a series of overhead charges, or taxes, on each subunit. These charges may be based on such measures of scale as the number of faculty, students, square feet of space, or, simply, the amount of direct expenditures.

The benefits of decentralized operation generally lie in two areas. The first is a more informed and, therefore, more adaptive management structure. Since a decentralized resource allocation system allows decisions to be made at lower levels in the organization, managers typically make decisions with more information and with more immediate feedback from the system they are managing. The second advantage is the ability to provide more direct incentives for subunits. A decentralized system implies some systematic allocation of resources from the central system to the subunits. With an explicit process based on a set of quantifiable performance measures, subunits can expect to receive an increase in their available resources if they perform better. Thus, an active incentive exists for subunit managers to increase their income or to use their current resources more efficiently. Similar incentives may exist in centralized systems; however, better performance may not result in more resources, and cost savings may remain with the central administration.

The Management Center System at Carnegie-Mellon University

The system of resource allocation designed for Carnegie-Mellon University (CMU) combines aspects of centralized and decentralized processes. The intent is to achieve the advantages of both while avoiding the disadvantages of either. The goals of the CMU management center system are defined as follows:

1. Elements of decentralization –

(a) to provide direct incentives for subunits[1] to increase productivity, or, in other words, to teach more, to attract and service more students, and to seek more

[1] At CMU the six main subunits are called colleges.

research funding.

(b) to provide incentives for the colleges to make more efficient use of university resources, most notably, space and computing

(c) to encourage external fund raising by the colleges themselves.

2. Elements of centralization—

(a) to maintain sufficient central control to allow the president to determine the overall direction and priorities of the university

(b) to maintain a sense of unity and common purpose in the university, that is, to encourage interdepartmental and inter-college efforts to take effective advantage of the strengths of the university as a whole.

The essential characterstic of the management center system is the balance between a collection of independently motivated colleges and a centrally guided university. Note that the centers are not expected to recover their full operating costs, and the system is not intended to be a complete substitute for subjective judgment in determining the relative merit, quality, or importance of the academic components of the university. Because the incentive features are incorporated "at the margin," the larger questions of long-run viability and contribution to the university are reserved for the judgment of the university administrators. The system provides incentives for the colleges while preserving the ability of the university to respond to change and to follow the subjective judgment of the decision makers.

In order to achieve these goals, the system requires strategies for each area of contention in the resource allocation process. Specifically, these strategies define rules for allocating income and charges and for handling surpluses and deficits.

Income strategies. Income strategies are the following:

1. To allocate a portion of the tuition income to the colleges on the basis of the amount of teaching done

2. To allocate a portion of the tuition income to the colleges on the basis of their full-time equivalent majors

3. To allocate all research overhead income to the subunits (net of any university indirect cost sharing).

Tuition allocations recognize and reward the contributions made by departments with attractive majors and by departments that offer attractive courses. The same tuition rate is used for all colleges for two primary reasons. First, the process of differentiating tuition on the basis of different costs relies on history rather than normative information. The state of higher education management is such that no one knows what the average or marginal costs of any particular degree program should be. We only know what they are, or were, with little real measurement of the relationship between cost and quality. A laboratory-dominated program such as chemistry might reasonably cost more per student than an equipment-free program such as history. However, no one knows how much more it should cost or how much more it is worth per student credit hour. Secondly, CMU charges a single tuition rate to all undergraduates. Therefore, a system of nondifferentiated tuition allocations to the colleges mirrors the university position that the differences in costs are centrally subsidized.

A strategy of allocating all the research overhead recovered (net of cost sharing) encourages the colleges to increase their overhead and to reduce their cost-sharing agreements. The current arrangement provides only vague incentives; for example, the central administration may or may not reward colleges for net increases in research overhead recovered.

The allocation of restricted endowment and gift income at CMU is highly constrained. Only a limited set of such specifically restricted income as endowed professorships and certain capital grants are allocated automatically. The bulk of the endowment and gift income is retained centrally and is used to provide the president with funds for differential support of colleges and programs.

Cost allocation strategies. Cost allocation strategies are as follows:

1. To directly charge the colleges only for those administrative services over the colleges they have control of usage (in the current CMU environment, only space and computing costs meet this criteria)

2. To tax only related income for other administrative services; e.g., student services is supported by a tax on tuition and research contracts, research contract administration by a tax on research income.

As stated earlier, the goal of the charges is to provide incentives; the charges are not designed to recover all of the central administrative costs. Incentives for efficiency operate well only when there is direct control by the consumer over the amount of service demanded and, thus, charged. Taxes on research and restricted income reflect costs incurred by the central administration and enable the total allocation system to achieve the proper balance of decentralized and centralized allocations. One must be careful to insure that "income tax" rates do not result in marginal income being less than marginal cost. Otherwise, taxes should not seriously impair the incentive structure.

Surplus and deficit strategies. Surplus and deficit strategies follow:

1. To structure the allocation system to require an additional allocation from the administration to each college (this allocation should not exceed 50 percent of the "earned income net of charges" for each center)

2. To fix the additional allocation early in the year so that the actual performance of the center on the income- and expense-related variables determines its final position

3. To allow colleges to accumulate reserves by retaining a portion of any year-end surpluses

4. To require colleges to repay year-end deficits.

The essential balance of the management center system is obtained by having the central administration make an additional allocation or subvention to the academic subunits. This allocation is the means by which the university-wide goals are accomplished. It is important for the university allocation to be fixed early in the budget process so that incentive structures can operate. The essence of the profit center aspect of the system is obtained by having the schools directly benefit from year-end surpluses and be responsible for repaying year-end deficits. The process by which the university allocations are changed from year to year and the ability of individual subunits to retain surpluses and repay deficits are the keys to success or failure of the management center resource allocation system. This area will require additional discussion with the deans, provosts, and president, but at CMU there is a feeling that a fruit-

ful and acceptable solution can be found.

Table 1 contrasts centralized, decentralized, and management center allocation processes for a hypothetical university. In a typical decentralized system, only income on short-term investments is retained centrally. The allocations from the administration to the subunits in a centralized system are generally based on informal, subjective criteria, whereas the administrative charge paid by the subunits to the administration in a decentralized system is usually based on a formula or rate structure. In the management center system, the charges to the subunits are netted out of the income items or the allocations and are not shown explicitly. A fuller accounting of the management center system could show these separately.

Allocation rates. The actual calibration of a system involves determining specific rates or prices for allocating income and expenses. One starting point is to examine the existing implicit rates. A simple linear regression model was used to study the relationship at CMU between the variables used as measures of performance (teaching units, majors, research support) and previous budget allocations. These regression models accounted for 60 to 70 percent of the variance in departmental budget allocations at CMU.

With the help of the regression results, calculations were made to determine rates that would result in sufficient tuition income to the colleges and still allow the central administration to cover the costs of students services, including libraries and undergraduate financial aid, from centrally retained tuition revenues. Appropriate rates for 1973-74 are those shown in Table 2. The tuition rates allocate approximately 70 percent of the undergraduate tuition and 80 percent of the graduate tuition to the colleges. The rate per unit is one-half of the actual tuition rate.

The dollar per square foot space charge is intended to represent the marginal cost of using space, custodial, and utility costs. The marginal cost is used because the total supply of space (buildings) is fixed. Therefore, the controllable cost is really the marginal cost. The colleges have the freedom to exchange space for other services, and the university can expect to recover the marginal cost of any unused space. The cost of structural improvements, modifications and maintenance, are budgeted and controlled centrally. The air conditioning charge represents full average cost because the supply of air conditioned space is not fixed. Many older buildings are not centrally air conditioned. If departments request new air conditioning, the university will recover the full cost of such additions. The research administration tax is designed to recover the costs of the university's research contracts and restricted fund administration.

Results. Applying the rates in Table 2 to the operation of Carnegie-Mellon University in 1973-74 results in directly allocating approximately 75 percent of the four undergraduate college budgets. This requires an additional 25 percent allocation from the central administration. (Charges for computing were excluded from these calculations.) The School of Humanities requires the smallest allocation, 18 percent, and the School of Sciences the largest, 31 percent.

Some of the principles of the management center system have been introduced independently into the traditional budgeting process at CMU. For example, graduate student tuition scholarships have traditionally been a budget problem. Because the tuition was earned centrally, there were many requests for budget adjustment to accomodate the expense of tuition scholarships in the colleges. Last year, colleges received targets for graduate tuition based on the net revenue received in previous years. Any graduate tuition received from students in a college in excess of the target was divided, with 80 percent returned to the colleges for their use in the current year or in the future. This system has the advantage of eliminating the need for negotiations about graduate student support, because any additional costs are borne by the college from its additional income or from other income such as research, and also of recognizing that there is some nonnegative marginal cost to the university of having an additional student on campus. Interestingly enough, graduate student tuition income was significantly higher last year than it was the year before, and the colleges managed to save some of their 80 percent share of the excess for purposes other than graduate student support. Incentive systems do work!

Future. CMU intends to implement a management center system for the 1977-78 budget cycle. There are still several significant questions that need to be resolved before the system can be tried more fully, however. First, the president and provosts are concerned that such a system interferes unduly with their influence over quality and content of programs. Most significantly, they are concerned about their ability to compensate for changes in the income structure during the year. For instance, under the current system, if unrestricted giving income is less than expected, and other sources such as research overhead are more, the university's position is unchanged. However, under a management center system, the surplus in research overhead is allocated to the colleges automatically, even though the central administration faces a shortfall in unrestricted giving. One solution is to identify the sources of income that make up the central subsidy and to pass through any shortages that occur. Another, and perhaps better, alternative is to maintain a central reserve. This problem deserves additional study.

A second major question concerns the determination of subsidies. Because the subsidy can vary from year to year, the college deans are concerned that it might be reduced to remove the effect of a surplus retained in the previous year. Thus, they argue, if surpluses only result in smaller future allocations, there is no real incentive to accumulate surpluses. Obviously, this effect will occur to some extent. The university must find a way to moderate this effect, so as to satisfy both the president and the deans, such as limiting the percentage by which the subsidy can be decreased from one year to the next. A graduated income tax on surpluses also has been proposed as a way of limiting accumulation of wealth in one area of the university.

Summary. The emphasis throughout this paper concerns the need to achieve a balance between subunit incentives and college or university goals in the resource

Table 1

Prototypical Examples of Resource Allocation Systems

	University administration	College A	College B	College C	Total
			Centralized resource allocation		
Income					
Tuition	10,000	.....	.....	.....	10,000
Endowment	5,200	.....	.....	.....	5,200
Gifts	1,500	.....	.....	.....	1,500
Research overhead	3,000	.....	.....	.....	3,000
Investment	300	.....	.....	.....	300
Total	20,000	.....	.....	.....	20,000
Allocations	(14,000)	6,000	4,500	3,500	0
Expenditures	6,000	6,000	4,500	3,500	20,000
Balance	0	0	0	0	0
			Decentralized resource allocation		
Income					
Tuition	.....	4,000	3,500	2,500	10,000
Endowment	.....	2,700	1,200	1,300	5,200
Gifts	.....	650	500	350	1,500
Research overhead	.....	1,700	1,200	100	3,000
Investment	300	.....	.....	.....	300
Total	300	9,050	6,400	4,250	20,000
Charges	5,700	(3,050)	(1,900)	(750)	0
Expenditures	6,000	6,000	4,500	3,500	20,000
Balance	0	0	0	0	0
			Management center resource allocation		
Income					
Tuition	4,000	2,500	2,000	1,500	10,000
Endowment	4,200	500	200	300	5,200
Gifts	800	300	250	150	1,500
Research overhead	500	1,400	1,000	100	3,000
Investment	300	.....	.....	.....	300
Total	9,800	4,700	3,450	2,050	20,000
Allocations	(2,800)	1,300	1,050	1,450	0
Expenditures	6,000	6,000	4,500	3,500	20,000
Balance	0	0	0	0	0

Table 2

Management Center Budget Allocation Rates for 1973-74

Income to colleges		Charges to colleges	
Tuition	$500/FTE undergraduate $800/FTE graduate $15/unit taught	Space	$1 per square foot per year
		Air conditioning	.75 per square foot per year
Research	100% overhead recovered (net of indirect cost sharing)	Research and restricted fund administration	5% of total direct costs
Subsidy	Negotiated	Computing	Academic computing as billed

allocation process. All of the parties see real advantages to a management center system if it can be structured in an appropriate way. Clearly, the most significant general result of a move away from a purely centralized system is more involvement of the campus community in the decision-making process and more awareness of the basis on which decisions, sometimes painful, are made.

ECONOMIC BENEFITS OF PROFESSIONAL SCHOOLS

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Assailed by legislators, taxpayers, and other pressure groups with charges of spending too much to operate professional schools, managers face the need to account for funds expended. State regulatory boards have rushed to adopt the Information Exchange Procedures developed by the National Center for Higher Education Management Systems or other costing analyses. But these costing packages all show dollars spent and include no reference to the benefits that accrue to states which have professional schools. In order to review the total dollar benefits as well as costs, there is a need for managers in universities to undertake cost-benefit studies or economic-benefit studies to provide information on financial benefits which professional schools bring to the university and state.

Guidelines for an economic-benefit study have been developed previously. The best known procedure was reviewed by Caffrey and Issacs (1971). Another, less complex approach that is suited to the needs of institutional researchers was presented by Montgomery (1973). This abbreviated approach might typically be used for an economic-impact study.

The procedure reported here was the outgrowth of a project that assessed the impact of locating a veterinary college in Virginia (Morey, Mahan, McLaughlin and Montgomery, 1976). This procedure can aid a university in obtaining cost-benefit data on an existing school or in assessing the economic impact of adding a new professional school.

This cost-benefit analysis is designed for institutional researchers. The analysis requires five steps, with each step composed of substeps. (With more experience, other items can be added which may increase effectiveness.)

Step I. Project Number of Professionals

a Year	b Current number of professionals in state plus number added by existing professional schools	c Number in state if existing college is expanded or new school added	d Net increase
1			
2			

In step I the basic parameters of need are identified or reestablished. This step generally requires that projections be made. (The projection technique presented by McLaughlin (1975) typifies the numerous methods available that are useful for institutional research.) In any event, Step I requires than an analysis be made of professionals who will be trained in the school. The following substeps allow this step to be taken.

Substep a: year. Determine the number of years in the project. One logical period is the life of the building(s) required for the expansion or the new school. This life span might be assumed to be 40, 50, or more years; however, we recommend 40 years as a compromise between true building life and the need for realistic cost figures.

Substep b: number of professionals in the state. The best source from which to obtain the number of professionals in a state is the national or local professional organization. In addition, it also is useful to estimate or obtain the number of nonmembers. Another source of numbers for some professionals is the state licensing-board. Using the existing number of professionals, one forecasts the number to be expected if there is no change in the status quo. There are several ways to make this estimate. A refined estimate requires information on net migration of professionals, practitioners within the state entering the profession, death, and retirement. An alternative, which is less accurate but also less complex, is to use a smoothed extrapolation of recent historical data.

Substep c: number of practitioners available under the changed situation. In most cases this figure is the number that would be available if a new school were added or an increase of a given size were to be made. In order to demonstrate the worth of an existing school, it may also be useful to compute the number of professionals who would be available if a school were discontinued. If a simulation is used to determine the values (projected number of professionals) in substep b, then substep c requires only the entry of the changed factor and a re-run with modified input values. When using extrapolation it is possible to assume a relationship between input and the number of existing professionals and to use this relationship in the projection. Evaluation of figures obtained from extrapolation may require additional assumptions. The relative ease of obtaining the estimated number of available professionals at various levels of input is the advantage of the simulation procedure.

Substep d: net difference by year. Obtain the net result of professionals available if the addition or proposed change is effectuated. This figure, which is obtained from the supply in substep c minus the supply in substep b for each year, produces net changes by year.

Step II. Project Annual Costs

Year	a Capitalization costs	b Operating costs	c Other costs
1			
2			

The categories used in projecting annual costs represent the major factors of expense in creating and operating a professional school. It is possible that by the time one needs a study of this type the costs may already have been calculated. Costs are often stated in terms of dollar capital requirements with little thought given to the time dimension of the problem. These costs, as well as the following revenues and benefits, are stated in terms of current dollars.

Substep a: capitalization costs. Capitalization costs, usually representing one or two new buildings, give part of the cost figure. If not previously computed as part of a space-needs analysis, the first task is to obtain a cost figure for the building (perhaps by determining square footage required) and for fixed equipment. The next step is to amortize the cost of capitalization over the life of the project.

Substep b: annual operating costs. The principal cost here is based on projected faculty requirements. Questionnaires sent to comparable professional schools are one way to obtain an estimate for personnel costs. Local ratios of professional-staff to other operating expenses can then be used to adjust estimates. Operating costs of any existing departments which are to be included in the proposed school or expansion should be added into the new operating costs.

Substep c: other costs. These additional costs involve such components as maintenance, additional library requirements, and costs created by an increase in the number of faculty, staff, and students on campus.

Step III. Project Annual Revenue

Year	a Revenue	b Unexpended costs
1		
2		
.		
.		
.		
.		
.		
.		

The term revenue, as used here, refers largely to income which the institution receives from nonstate sources.

Substep a: revenue. Revenue funds accrue to the institution by virtue of having a new school or expanding an existing one. The major items in the revenue funds are student-related, such as student tuition and fees (including out-of-state and special fees), and income from federal or private sources which is for use in educating those in specific professions: for example, federal capitation funds for certain health services or minority program grants. Also, in some cases the school will have an inherent revenue-generating source, such as a clinic or a hospital.

A final major source of revenue is the current level of support to any existing departments or divisions which are to be incorporated into the new school. Since presents costs were shown in step II, these are now removed. This step is necessary to (a) show total costs of the proposed or expanded school, and (b) to keep from being penalized for the costs of an existing department which would have been continued regardless of the proposed change or addition.

Substep b: unexpended costs. This substep provides a place to show those state expenditures to external institutions and agencies that would be obviated by the creation of the new school. Any student support (or contract fee) the state pays to external institutions in lieu of establishing an in-state institution should be shown. State expenditures for out-of-state consulting services and other activities which would no longer be made would also be included.

Step IV. Project Annual Economic Benefits

Year	a Direct benefits	b Indirect benefits
1		
2		
.		
.		
.		
.		
.		
.		

If one considers the state as a closed economic system, then the creation of a professional school will cause an increase of wealth to the state. Such wealth or economic benefits do not necessarily pass directly through the school. Instead, they may derive from new money coming into the state, old money not leaving the system, an acceleration of existing funds, or a reduction in costs of processes outside the school but within the system. The first two of these influences are considered direct economic benefits; the latter two are considered indirect economic benefits.

Substep a: direct benefits. Direct benefits represent new money which would be attracted to the state and current drains on the economy which would cease. One major source of new money is expenditure by out-of-state students for items other than tuition and fees. Such expenditures can be rather substantial and should be estimated on a per-student basis. The same per-student estimate can be used for in-state students who now remain in the state and spend their money at home, so to speak. This direct benefit can also include differences in tuition where the student would have paid out-of-state fees at an alternative institution. The second major direct benefit is federal and agency grants which accrue to the institution because of the school. These increase the economic wealth but are not considered revenue unless the state is paying faculty to obtain funded research grants. Ordinarily, grants do not reduce state costs, although overhead funds derived from grants may save certain expenditures, such as those for equipment. The research grants potentially available may amount to millions of dollars; however, a check with other schools on their research funding will allow a reasonable estimate to be made.

Substep b: indirect benefits. The number of professionals actively involved in state practice will be affected by the addition or deletion of a professional school. This net increase (or decrease) is the basis for finding indirect benefits. Professionals, for example, add value to an economy by preventing dollar loss. Such dollar savings result from an increased probability of early diagnosis and problem resolution, as well as from research findings. Also, by earning and spending their salaries, professionals add value to an economy by in-

148

creasing the velocity of the money flow.

Step V. Estimate Economic Impact

Year	Costs	Revenue	
1			
2			
.			
a	b	c	d
New cash required	Total benefits	Impact	Profitability index
1			
2			
.			

The economic impact of a school over a period of time can be reviewed in several ways. One of the more traditional approaches is to compute net impact by year: e.g., "This year benefits will exceed new cash required by $400,000." Another approach is to view cumulative differences: e.g., "The project will break even by year 12 and by the 15th year total benefits will exceed new cash required by $200,000." A third procedure, used by industry, is to calculate a profitability index. In order to find the profitability index, one computes the present value of total costs by discounting costs at some reasonable percentage rate back to the present and then makes the same computations for the dollars realized from the project. The ratio derived from the total present value of income divided by the total present value of costs represents the profitability index. In theory, if the index obtained is greater than 1.00, the project is a good investment.

Substep a: new cash required. New cash required is computed as costs minus revenue. This figure is assumed to be similar to costs for a traditional firm since frequently state appropriations are actually a part of the discernible components of revenue in state institutions. For this reason, new cash required is used as the appropriate cost figure for the profitability index.

Substep b: total benefits. Total benefits are the sum of direct and indirect benefits times the appropriate economic multiplier. The economic multiplier is a number which takes into account the fact that a dollar spent in a system will be spent several times before it leaves the system by way of savings or purchases outside.

Substep c: annual economic impact. To obtain the annual economic impact, the annual total benefits is subtracted from the annual new cash required.

Substep d: profitability index. Discount new cash required and economic benefits to the current year and compute the profitability index; that is, divide the total present value of benefits by the total present value of new cash required.

Conclusion

This model provides a step-by-step procedure for use in estimating the economic impact a professional school has on a state. It is offered as a means to provide a first estimate in dollars and cents of the value of such a school. We are not arguing that this analysis will result in true values, because these schools have long- and short-range benefits beyond our ability to measure or even to estimate. At the same time, when management is continually pressed to respond to information about costs only, it seems reasonable to provide decision makers with information which allows a fuller discussion of both costs and benefits.

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"... SIX IS FATAL ..." A CASE STUDY OF INTERINSTITUTIONAL COST COMPARISONS

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> "Injuries have been coded according to the American Medical Association's Abbreviated Injury Scale. This scale ranks injuries in increasing severity from one to nine where one is minor, six is fatal and so on."[1]

Introduction

People seem to have an inherent faith in the validity of numerical data, particularly when the number of digits seem to imply precision and significance. This, of course, only holds true when the data do not fly in the face of reason as is the case with the 9-point scale referred to above. If six is fatal, it is hard to imagine what nine could possibly represent on that scale.

There are other statistical presentations which are not so humorous and which sometimes turn out to be fairly serious. The particular problem that we wish to focus upon was created by a recent publication of the British Columbia Research Council entitled *The Impact of Community Colleges.*[2] We chose this issue because it is illustrative of a particularly vexing class of problem faced by all institutional researchers.

Genesis of an Institutional Problem

Coincidental with the national meeting in Vancouver of the Association of Canadian Community Colleges, and with the provincial election in early December 1975, the B.C. Research Council released a report entitled "The Impact of Community Colleges–A Study of the College Concept in British Columbia." It is also important to note that within the ensuing three months the 1976-77 college and university budgets were to be established.

The report reflects the findings of a 4-year program designed and undertaken to evaluate the impact of British Columbia Community colleges. Numerous studies and surveys were conducted as part of this research project. These measured the impact of the colleges on students, the educational system, and the community. This, their final document, summarizes all of their findings from their numerous studies and surveys and seeks to draw them into an integrated whole.

One chapter of the report, entitled "Financial Perspectives," is intended to provide a broad perspective of educational costs and finance, to relate these costs to government expenditure and economic output, and to make broad comparisons of costs between the major sectors of education and between institutions in the postsecondary area.

One table in this chapter of the report purports to compare institutional cost and total cost per full-time equivalent (FTE) student for the British Columbia colleges and universities. The table, which is reproduced in full later in this paper, shows that the average instructional cost per FTE student was approximately $1,350 for the nine colleges and $2,700 for the three universities. Furthermore, the average total cost per FTE student was approximately $2,300 for colleges and $4,950 for the universities. Data on the latter measure (that is, total cost) ranged from a low of $1,600 per FTE student at Vancouver Community College to a high of $5,437 at the University of British Columbia.

Given the timing of the report and the self-evident public policy implications emerging from the Table, the need for an examination by the universities and universities council of the figures and the methodology used to arrive at them was immediately apparent.

The British Columbia Background to the Limited Resource Problem

Prior to 1963, the University of British Columbia was the only provincial university in the province. Under the Universities Act of 1963, Victoria College, a unit of the University of British Columbia, was established as a separate university, as was Simon Fraser University.

The first college grew out of the largest provincial school system, Vancouver, in 1965. Between 1965 and 1971 eight additional community colleges were established, and in the past two years, four more have been added, all located in rural centers. In addition, the British Columbia Institute of Technology and the Burnaby Vocational School also provide educational opportunities in the province.

Different funding arrangements exist for the universities and for the community colleges. From 1963 through 1972, the three public universities independently submitted operating grant requests to the provincial government which determined the total of such grants to be awarded. The total operating grant was then turned over to the Financial Advisory Board, consisting of equal representation from the universities and appointees of the provincial government, whose task it was to allocate the total grant among the three universities. With the election of the New Democratic Party government in 1972, legislation providing for the establishment of a universities council was passed. Since that time, the universities have made operating and capital submissions to the Universities Council who, in turn, have prepared a universitywide submission to the government. In lieu of the Financial Advisory Board, the Universities Council is now charged with allocating the operating and capital grants among the universities.

The method of funding colleges is significantly different than that for universities. The budget for academic/technical instruction plus expenditures for administration, plant operation, library and student

services are shared 60 percent provincial funding and 40 percent local college district funding. Debt service and vocational education are 100 percent provincially funded, while any shortfall in ancillary service operations (bookstore, food services, housing, and non-credit activities) is funded entirely by the local college district.

With regard to the actual funding itself, it is fair to say that, while both sets of institutions have been treated fairly relative to similar institutions in other provinces, there is considerable competition for funds between the universities and the colleges. This situation is aggravated by the separate funding avenues available to the universities and the colleges.

Following the election of the Social Credit government in the fall of 1975, the handwriting was immediately on the wall: Funding for education was going to be tight this year and even tighter next. This message emerged in the context of university operating grant requests for 1976-77 averaging in excess of 30 percent and the college requests which in some cases were 200 percent above their 1975-76 operating grant base.

The Immediate Institutional Response

The table, purporting to compare[3] institutional and total costs at all British Columbia colleges and universities, came to us in a fashion that was guaranteed to get attention and immediate response. We were attending a committee meeting at the Universities Council of British Columbia (UCBC) and a member of the UCBC staff gave us a xerox copy of the table with the statement: "Could you check these data? This table has come to the attention of the Deputy Minister of Education and he wants to know if they are accurate."

Our first reaction was that we needed to determine how everything was calculated and the accuracy of the source data. We had very little time in which to do this, because in less than three weeks a provincial election was scheduled, and campaign oratory was reaching its high point. We were concerned that these data, which appeared to be incorrect, might be used to affect government policy and, subsequently, levels of funding to the colleges and universities.

There was simply not time to do anything else but a "quick-and-dirty" cost study. A properly conducted cost study would have a pre-established methodology and standard data requirements. It would also include a procedure for sending the preliminary calculations to each institution for expert evaluation, or vetting. This procedure was not followed in the original study, and there was insufficient time in the existing situation.

While we were in the process of evaluating the data, the British Columbia Liberal Party campaign platform was published and widely distributed to every household in the province. The platform highlights for education stated "Our emphasis for education should be shifted from the later years to the earlier years; from the secondary to the primary, *from the universities to the colleges*" (italics ours). Furthermore, under the heading, Clean up Problems in Education, it said: "Universities are now spending from two to four times as much per student as are the community colleges. This should be corrected and made more equitable."

This implied that the costs per student were for comparable levels of instruction. It was time to hit the panic button! Since no other cost study existed in British Columbia, the basis for this statement had to be the table in the B.C. Research publication. (It is an interesting coincidence that the author of the chapter in question[4] is the president of the Liberal Party Association in his area and the chairperson of the British Columbia Liberal Party Committee is the principal of one of the community colleges.)

We began to study the publication, evaluate the data, and recalculate the expenditure per FTE student. The identical source documents were used, and a concerted and detailed effort was made to ensure comparability. The results are strikingly different from those originally published.

We went one step further and attempted to calculate costs for each of the universities which were comparable to the cost data for the colleges. In particular, an attempt was made to estimate the expenditures per FTE student in the first two years of the basic programmes at each of the universities.

The reader is urged to compare the conclusions drawn from each of the two versions of the results and reflect upon the impact of public policy that stems from each version.

Vetting the Source Data and Recalculating Results

A detailed examination of the table in question[5] indicates that (a) a significant amount of the data reported are erroneous, (b) several of the underlying assumptions are fallacious and, (c) the data are not comparable.

Factual errors.

1. All enrolment data for the universities are incorrect.

2. The table published implies that total enrolments are shown. In fact, enrolments for all institutions are "snapshots" of the winter session enrolment only. No enrolment is shown for inter-session, summer session, correspondence, or non-credit continuing education.

3. Contrary to table footnote 1, the college enrolments include preparatory student enrolments as well as university transfer (academic) and career/technical programmes.

4. The universities do have a generally accepted method for converting head-count enrolments into full-time equivalences; it is true that colleges have no comparable standardized method.

5. Contrary to caveats expressed in the paragraphs preceding the table, cost data for 5 of 9 colleges are inconsistent in that some include deficits from prior years, ancillary operations, vocational expenditures, expenditures for non-credit programmes, and so forth.

6. In the *Impact of Community Colleges* the statement is made that "The capital expenditures for the universities normally represent a fairly stable proportion of their total budgets. Consequently, it was considered reasonable to include these as part of the costs of their operation."

TABLE 12-5

A COMPARISON OF ENROLMENTS AND COSTS IN BRITISH COLUMBIA'S COLLEGES,[1] TECHNICAL INSTITUTE AND UNIVERSITIES (1973-74)

INSTITUTION	ENROLMENT				INSTRUCTIONAL COST		TOTAL COST	
	FULL-TIME	PART-TIME	TOTAL	F.T.E.[2]	TOTAL ($1,000)	$/F.T.E.	TOTAL ($1,000)	$/F.T.E.
COLLEGES								
Camosun	921	640	1,561	1,134	1,763	1,555	2,571	2,267
Capilano	1,048	857	1,905	1,134	1,365	1,023	2,857	2,157
Cariboo	438	445	883	586	1,010	1,724	1,678	2,863
Douglas	1,434	1,618	3,052	1,973	2,977	1,509	5,683	2,880
Malaspina	603	946	1,549	918	1,355	1,476	2,351	2,561
New Caledonia	362	698	1,060	595	883	1,484	1,620	2,723
Okanagan	613	340	953	726	1,115	1,536	1,799	2,478
Selkirk	483	188	671	546	1,147	2,101	1,892	3,465
Vancouver (Langara Campus)	3,174	1,220	4,394	3,580	3,713	1,037	5,730	1,600
TOTAL	9,076	6,952	16,028	11,392	15,328	1,345	26,181	2,298
TECHNICAL INSTITUTE								
B.C.I.T.	3,027	4,607	7,634	4,179	6,354	1,520	9,065[3]	2,169
UNIVERSITIES								
U.B.C.	18,745	1,997	20,742	19,411	58,278	3,002	105,529	5,437
Simon Fraser	5,007	1,113	6,120	7,273	14,823	2,038	26,715	3,673
Victoria	4,601	950	5,551	4,918	12,118	2,464	23,711	4,821
TOTAL	28,353	4,060	32,413	31,602	85,219	2,697	155,955	4,935
GRAND TOTAL	40,456	15,619	56,075	47,174	106,901	2,266	191,201	4,053

1. *Academic and career/technical only (vocational division excluded).*
2. *According to a general rule of thumb, 3 part-time students are equivalent to 1 full-time student.*
   At B.C.I.T., where almost all part-time students are enrolled in the Extension Division (night school), the ratio of 4:1 is assumed.
3. *Excluding capital expenditures.*
4. Source: Dennison, John D., et al, *The Impact of Community Colleges: A Study of the College Concept in British Columbia*, (Vancouver, Canada. B.C. Research Council, November 1975).

SIX IS FATAL

AMENDED TABLE 12-5

A COMPARISON OF ENROLMENTS AND COSTS IN BRITISH COLUMBIA'S COLLEGES,[1] TECHNICAL INSTITUTE AND UNIVERSITIES (1973-74)

INSTITUTION	ENROLMENT				INSTRUCTIONAL COST		TOTAL COST	
	FULL-TIME	PART-TIME	TOTAL	F.T.E.[2]	TOTAL ($1,000)	$/F.T.E.	TOTAL[3] ($1,000)	$/F.T.E.
COLLEGES								
Camosun	921	640	1,561	1,104	1,763	1,597	2,464	2,232
Capilano	1,048	857	1,905	1,293	1,365	1,056	2,409	1,863
Cariboo	438	445	883	565	1,010	1,788	1,318	2,332
Douglas	1,434	1,618	3,052	1,896	2,977	1,570	4,676	2,446
Malaspina	603	946	1,549	873	1,355	1,552	1,965	2,250
New Caledonia	362	698	1,060	561	883	1,574	1,399	2,494
Okanagan	613	340	953	710	1,008	1,420	1,460	2,056
Selkirk	483	188	671	537	1,147	2,136	1,818	3,385
Vancouver (Langara Campus)	3,174	1,220	4,394	3,523	4,080	1,158	5,517	1,566
TOTAL	9,076	6,952	16,028	11,062	15,588	1,409	23,026	2,082
TECHNICAL INSTITUTE	3,027	4,607	7,634	4,343[2]	6,978	1,607	9,058	2,086
UNIVERSITIES								
U.B.C. (lower division)	5,599	112	5,711	5,613[4]	9,138	1,628	14,758	2,629
Simon Fraser (lower division)	2,467	714	3,181	2,671[5]	6,886	2,578	11,143	4,172
Victoria (lower division)								
TOTAL-LOWER DIVISION	8,066	826	8,892	8,284	16,024	1,934	25,901	3,127
GRAND TOTAL	20,169	12,385	32,554	23,689	38,590	1,629	57,985	2,448

NOTES:

1. University Transfer (Academic), Career Technical and College Preparatory Programme enrolments only (vocational divisions excluded).
2. According to Statistics Canada conversion rules, 3.5 part-time students are equivalent to 1 full-time student; this ratio was used for B.C.I.T. as well.

AMENDED TABLE 12-5 CONTINUED

3. Excluding Capital Expenditures.

4. If F.T.E.'s are calculated by Universities Council of British Columbia methodology which is based on "normal" full-time loads by faculty, program and year level, the results are as follows:

18,370	2,988	21,358	19,571	52,061	2,660	73,235	3,742
5,599	112	5,711	5,669	9,138	1,612	14,758	2,603

5. If F.T.E.'s are calculated by Universities Council of British Columbia methodology which is based on "normal" full-time loads by faculty, program and year level, the results are as follows:

5,572	1,679	7,251	6,184	13,396	2,166	23,227	3,756
2,467	714	3,181	2,678	6,886	2,571	11,142.6	4,161

6. Because its revised calculations are not yet available, data for the University of Victoria has been excluded from all of the calculations. However, we expect that inclusion of the University of Victoria figures would not significantly alter the above calculations.

7. Because we believe comparability was intended by the original published table, we have chosen to include only lower division university costs in the amended table. However, if we had strictly adhered to the format of the original table, the original calculations as amended would have shown the following:

	ENROLMENT				INSTRUCTIONAL COST		TOTAL COST	
UNIVERSITIES	FULL-TIME	PART-TIME	TOTAL	F.T.E.[2]	TOTAL ($1,000)	$/F.T.E.	TOTAL[3] ($1,000)	$/F.T.E.
U.B.C.	18,370	2,988	21,358	19,224	52,061	2,708	73,235	3,809
Simon Fraser	5,585	1,682	7,251	6,083	13,396	2,202	23,227	2,818
Victoria	4,601	1,468	6,069	5,076	12,118	2,387	18,794	3,703
Total	28,556	6,138	34,678	30,383	77,575	2,553	115,256	3,793
GRAND TOTAL	40,659	17,697	58,340	45,788	100,141	2,187	147,340	3,218

8. Revised calculations undertaken by Dr. Wm. Tetlow, Director, Office of Analysis and Planning, University of British Columbia; Dr. J. Chase, Director, Office of Analytical Studies, Simon Fraser University; and Mr. J. Currie, Director of Institutional Analysis and Assistant to the President, University of Victoria.

* * * * * *

This is incorrect. The capital expenditures of each of the universities for 1972-74 are as follows. (Percent of total expenditures is in parentheses.)

	UBC	%
1972	$10,037,000	(9.5)
1973	11,849,000	(11.8)
1974	23,472,000	(22.1)
	SFU	**%**
1972	$ 902,000	(3.4)
1973	646,000	(2.6)
1974	4,750,000	(17.3)
	UVic	**%**
1972	$3,353,000	(14.1)
1973	1,773,000	(8.7)
1974	1,619,000	(8.3)

Fallacious assumptions.

1. The capital expenditures of the universities do not represent a stable proportion of their budget (see Factual Error 6). Furthermore, equating capital grants in the universities with debt services (repayments of principal and interest on long-term capital borrowing) is neither appropriate nor accepted financial practice as a suitable average means of accounting for capital expenditures.

2. "It should be remembered that there are no generally accepted ways of relating part-time and full-time students, or even of comparing full-time students taking different programmes."

This is simply not true. To the first point it should be noted that *Statistics Canada* has a standard practice of equating 3.5 part-time students to one full-time student for purposes of calculating full-time equivalency. As to the second point, both British Columbia and Ontario universities have a well-established system of weighting factors for comparing enrolments in different programmes for financial analysis purposes.

3. Comparability of data for BCIT is implied in the table, yet capital expenditures were excluded for BCIT but included for the universities.

4. The table presented implies comparability, yet no attempt is made to compare the costs per student of the first two years of general programme instruction (i.e. arts and science) at the universities with the terminal two year programmes at the colleges.

Comparability: The resultant comparisons of multi-discipline (for example, arts, medicine, agriculture) and multilevel (first-year undergraduate through doctoral) universities with a comprehensive technical institute and with lower division two-year college operations is misleading, at best, especially with regards to costs per hypothetical average students. It is difficult to imagine what the average university student represents considering the range of programmes and levels of instruction. Comparability was intended by the published table; it was not achieved.

Amended calculations. The two tables on the preceding three pages are presented as a summary statement concerning the validity of the original table. The first table is a copy of the original, with all incorrect data and statements italicized for emphasis. The second table is the result of the same calculations, using correct data and comparable summations; the *identical* source data were used. The reader is urged to reflect upon the different conclusions drawn from each of the two tables.

The Continuing Provincial Need

Emerging out of the B.C. Research Council analysis and our response to it are several fundamental requirements for a study of this type. First is the need for agreement on a pre-established methodology including standardized data requirements. The second requirement is a procedure for sending the preliminary calculations to each institution for vetting. Adoption of both of these requirements by the B.C. Research Council would have avoided the errors in enrolments and instructional and total dollars associated with the original table.

For the future, it is clear that even our recalculation of the B.C. Research Council table is lacking. The issue being raised by the B.C. Research analysis is whether the academic transfer program of the colleges represents an economic substitute for the first two years of university. The issue is of critical importance to the colleges, the universities and the provincial government because of its significance and far reaching public policy implications.

The basis for our allocation of costs between lower division, upper division, and graduate work was student contact hours. This method ignores both the question of relative effort required to teach the courses at the various levels as well as the faculty requirements for graduate student thesis supervision and research. Clearly we are still comparing apples and oranges. A more satisfactory and more defensible, although more involved, procedure would be the undertaking of a comprehensive cost study involving a faculty activity analysis as one of its components. Only in this way can a proper assessment of costs be attributed to lower, upper, and graduate work.

Conclusion

We have attempted in this paper to provide you with a case study of a type of problem which we believe is encountered with regrettable frequency by individual institutional researchers. Some persons will argue, no doubt, that we have overstated the potential impact of the original erroneous data, or over-reacted to the incident or "problem." We disagree, because our experience indicates that very far reaching actions and policies are adopted on the type of *evidence* presented in the B.C. Research Council publication.

On a 9-point scale we would, perhaps, be inclined to rate the problem as five, BUT REMEMBER, on at least one scale ". . . six is fatal. . . ."

Footnotes

[1] From a paper titled Seat belts in Canada—What are they good for? by A. Carl Shields and L. Glen Watson, presented to the Roads and Transportion Association of Canada Conference in Calgary.

[2] Dennison, John D. and others, *The impact of community colleges; A study of the college concept in British Columbia.* (Vancouver, Canada, B.C. Research Council, November 1975).

[3] Ibid., Table 12-5, p. 135.

[4] Ibid., chapter 12, pp. 126-140.

[5] Ibid., Table 12-5, p. 135.

ANALYSIS OF STATE FINANCIAL SUPPORT OF HIGHER EDUCATION: PITFALLS AND PROMISES

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As financial resource constraints become more critical in postsecondary education planning and management, the need for more comprehensive analysis that goes beyond simple measures of the level of support has become more apparent. While measures of the level of support (e.g., state dollars per student) clearly identify differences among states, and among institutions within states, such measures are inadequate in contributing to an understanding of the reasons for these differences. The importance of a more complete examination of state support is clear to those at the state level and within institutions who continue to be involved in the process of arbitrating state support. Too often, discussions about the adequacy of state financing become sidetracked in debates over the source of data, the specific measures used, and the accuracy of information.

While these concerns are likely to persist (and in many cases rightfully so), the importance of dealing more directly with the substantive issues associated with financial support is being increasingly recognized. The task, however, is a complicated one. Conflicting pressures continue to be felt regarding (a) the adequacy of state support for the number of students being educated, (b) the resources available to the state for providing support, (c) the types of program offered, (d) state funding of competing social programs, and (e) efforts by the state and postsecondary institutions to maintain program quality in the face of serious inflation. These conflicting influences illustrate the complex nature of the resource allocation process within a state. They also make evident the increasing need for representatives of higher education to make their case in more specific and meaningful terms.

This paper summarizes the methodology and findings of a recent study by the National Center for Higher Education Management Systems (NCHEMS) of state and local support of higher education (McCoy, Cherin, Makowski and Weldon, 1976). In addition, the paper abstracts general insights gained from the study and other institutional-state experiences of the authors. The pitfalls and promises in the analysis of state financial support are highlighted. Because of the extent to which institutional-state interaction has recently been focused in the area of information and analysis (for example, increased reporting requirements or the need to project policy impacts), it appears particularly important that researchers explore the implications of their work for institutional-state relations.

Description of the Study

The study is an empirical analysis of state and local financial support of higher education for all fifty states. The authors of the study used existing data from a number of sources, such as the National Center for Education Statistics, the U.S. Census Bureau, and the National Association of State Scholarship Programs. The major focus of the study is the development of a more comprehensive framework for analyzing the role of state and local support. Initially, a detailed analysis is presented of the variety of ways in which state and local support can be measured and the important consequences of these procedures in affecting the level of support actually measured. It differs from previous studies on this topic in its use of data from *institutions* reporting the amount of funding received from the state. This focus on recipients contrasts with the approaches used by both M. M. Chambers (1974) and Glenny-Ruyle (1975), which rely on the responses of state higher education agencies (the providers of support) to indicate the extent of state support for higher education.

The main emphasis of the study is to attempt to more comprehensively describe the variety of influences which may affect support patterns in states and institutions. Examples of these factors include the following:

1. Different Distribution Patterns—that is, the differing ways state and local higher-education dollars are spent (that is, by institutional and student aid needs, by type of institution, or by major institution function) and how these may be tied to state support levels.
2. Levels of Institutional Expenditures—how the overall level of funds spent by institutions (expenditures per student) and the state and local proportions of those expenditures influence state support levels.
3. Other Sources of Support—the extent to which nonstate sources (for example, federal government, private donors, or students) provide higher-education funds and how these appear to substitute for state and local dollars.
4. State Goals and Objectives—how differing state goals, such as student access, affect state and local support levels.
5. State Tax Capacity—how the differing income and wealth bases among the states and the states' mechanisms for taxing this wealth affect state and local support of higher education.
6. Competing State and Local Programs—the extent to which other state programs like health and highways compete for state and local dollars.
7. Other Factors—a discussion of some additional considerations, such as inflation, that may be related to state and local support levels.

These factors are analyzed for public and private higher education separately. In addition, the institutional analysis is further disaggregated by major types of institutions (i.e., university, four-year, and two-year

institutions). The analyses encompass two years of data, fiscal years 1973 and 1974.

Selected National Findings

While the primary value of this study resides in the state-by-state profiles of financing and related factors, a number of interesting national patterns are also made visible. A selected number of these findings are cited to illustrate the types of financing pattern which exist. It should be remembered, however, that these examples represent national averages and that a detailed examination of these expenditures for specific states shows substantial variations from them. The following summary comments for FY 1974 are noted:

A. Level of state support. As expected, most state and local financial support is provided to the public sector of higher education. Of the total educational and general purpose support provided by state and local sources to higher education, 96% is funneled to the public sector ($49 per capita to the public sector and $2 per capita to the private).

From FY 1973 to FY 1974, state and local support to the public sector, per student and per capita, increased by 14%. When this increase is adjusted for inflation effects, the real dollar increase is 6%. However, as a percentage of total state and local revenues, higher education's share showed a proportional decline of 7% (from 5.6% of total state and local revenues to 5.2%).

B. The distribution of state support. While state and local support of higher education increased by 14% (per student), the extent to which particular groups of institutions shared in this pattern varied considerably. From FY 1973 to FY 1974, state and local support of public universities decreased 26% on a per student basis. By contrast, four-year public institutions showed an increase in per student support of 25%, and two-year institutional support grew by 17%. These changes have been computed on a per student basis to adjust for shifting enrollment among the institutional groups.

Other differences are evident. In FY 1974, state and local support to public universities was $2174 per student. This level was 10% higher than support to four-year institutions ($1972 per student) and 50% higher than funding to the two-year colleges ($1438 per student). However, in terms of the total dollars distributed from state and local sources (absolute dollars, not per student dollars), four-year institutions received 39%, universities 35% and two-year institutions 26%.

The majority of state and local support (97%) was for general purposes. Only 3% of state contributions were provided to support sponsored research and other sponsored programs. This contrasts sharply with federal higher-education support of public institutions, where 51% of federal dollars were for sponsored research purposes, and other sponsored programs received another 31%. Funds for general institutional programs, such as instruction, only accounted for 18% of federal support. Even these funds were often designated for specific workshops and other functions. This pattern clearly illustrates the very limited extent to which federal funding could be viewed as a substitute for state support. Most such funding received by institutions was for specific, contracted purposes.

C. Institutional expenditures. Expenditures in private institutions for educational and general purposes were approximately 40% higher per student than in public institutions ($4036 vs. $2898). The major reason for this difference appears to be the fact that spending in private universities was 56% higher than in public universities. In part, this may be due to the greater focus in the private sector on graduate-level education. Seventeen percent of private enrollments were at the graduate level, compared to 10% of public enrollments. Differences between public and private spending rates were less marked for the other two classes of institution. In private four-year colleges, institutional expenditures were 7% higher, and in private two-year institutions they exceeded by 10% those in similar institutions in the public sector.

Overall public sector institutional expenditures increased 12% between fiscal years 1973 and 1974. Increases in university spending, less than this average rate, increased by only 7%. In four-year institutions, expenditures increased by 18%, and there was a 15% increase in two-year institutional spending.

The share of total public sector expenditures supported by state and local funding varied markedly by class of institution. While 65% of all public institutional expenditures were covered by state and local sources, two-year institutions showed a markedly higher reliance on state funding sources. Eighty-two percent of public two-year institutional expenditures were supported through state and local financing. For four-year institutions this outlay was 68%, and for universities it was 53%. While state and local funding provided the majority of support for all institutions, dependency on these sources did vary substantially by type of institution.

D. Other revenue sources. An examination of revenue sources indicated that, in FY 1974, 60% of all educational and general revenues received by public institutions were from state and local sources. (This 60% is based on institutional revenues and differs from the 65% in the previous paragraph which was based on institutional expenditures.) The federal government contributed an additional 14%, and revenues from student tuition charges provided 16% more. (An additional 10% was received from private philanthropy, institutional income, and other sources.) When compared with the data on revenues in FY 1973, these figures indicate that the relative share provided by state and local sources was increasing, while the shares provided by federal and student contributions were decreasing proportionally. (Actual per student revenues from federal and from tuition sources were increasing, but at a lesser rate than state and local support.)

In the private (independent) sector, the role of specific revenue sources differed markedly from those exhibited in public institutions. Only 4% of revenues in private institutions were from state and local sources. Fifty percent of revenues came from student tuition charges, 20% from the federal government, 13% from private sources, and 11% from institutional income, including endowments.

E. Student enrollment. Nationally, enrollments in the public sector were almost evenly distributed among the three types of institution. Thirty percent of public student enrollments were in universities, 37% in four-year institutions, and 33% in two-year institutions. In the two time periods studied, there was a 1% share shift from universities to the two-year institutions. While these percentages applied to the United States as a whole, the distribution of enrollments among types of

institution did differ a great deal among states. These differences are mentioned here in recognition of the fact that the national average rates of state support described previously were also tied to the enrollment patterns just described. Thus, a state, in comparing its support rate to the national average, should also compare its enrollment mix and other specific characteristics to those which comprise the national profile. For example, if a state had a greater than average enrollment in community colleges, its state support level might be expected to be lower than the national average if university enrollments were not also greater than average. (Note that this represents only one characteristic of a state's educational system and other factors should be considered as well.)

Two further extensions of this national profile involve comparisons of enrollment rates to specific population groups. The ratio of student enrollments in public institutions to the number of persons aged 18-20 was .46. This population attendance ratio has shown almost no change from 1972-73 to 1973-74. First-time public student enrollment as a ratio to the number of high school graduates is .62. This represents a 13% increase since 1972-73.

F. Total state expenditures. The level of total state expenditures per capita increased between FY 1973 and FY 1974 by 17%. However, education and higher education both experienced some decrease in their relative shares of the state budget. Health and hospitals as well as public welfare also experienced some relative decline in proportional shares, whereas the proportion allocated to highways and others (such as police and administration) increased slightly.

A Single State Example

While the summary patterns just described were indicative of the U.S. profile, individual state patterns often differed markedly from these overall averages. Table 1 provides selected financial support and related data for three states to illustrate some of the particular kinds of individual profiles which exist. To demonstrate the diversity of individual state patterns, the states were selected because of differences in size, economic base, and educational structure. They should not be viewed as peer states. While the profiles portrayed in Table 1 will not be discussed in detail, a single example will be cited to illustrate the manner in which these varying factors interrelate.

When state and local support is related to the state's population base (support per capita), the data in Table 1 indicate that Colorado's citizens provided support at a rate that exceeded the national average by 16%. When that support is related to the number of students supported in public institutions, however, the pattern shifts, and Colorado's support was 20% below the national average. The information in the remainder of the table provides some explanation for this pattern. Colorado educated a larger than average number of students in its educational system (as evidenced by the substantial enrollment of out-of-state students [noted by a large differential between support per public student and per public resident student], by a higher than average ratio of enrollments to the number of 18- to 20-year-olds [.60], and by a high reliance on public education [88% of all enrollments]). In addition, the level of state support and proportion of institutional expenditures which the state provides were lower than average. In part, this lower state level was compensated for by higher than average federal contributions and tuition revenues. However, in two of the institutional types (universities and four-year institutions) the expenditure levels were somewhat lower than average. A more detailed analysis of programs in these institutions would be necessary to determine whether or not this pattern was appropriate. The remaining information reiterates the point that the state, in terms of its tax capacity and public expenditure rates, was contributing to higher education at a rate above the U.S. average.

This simplified example provides an initial profile of state financing in Colorado that can be extended, through use of other analyses in the study report and through more detailed analyses of intra-state data. It is useful, though, in illustrating advantages of using more extensive data than simple level measures of state support, which brand a state as high or low.

Pitfalls and Promises

In addition to the basic framework of the study, the research project has provided a basis for abstracting a number of key facets which can be generalized for state-institutional perspectives. These concern the scope of analysis undertaken and its jurisdictional implications; factors associated with the selection of data in terms of its accuracy and the costs imposed on reporting institutions and other units; the appropriateness of comparative analysis both between states and within a single state (for example, among types of institutions); and the general process of state and institutional analyses and how they can be effectively interfaced.

A. Scope of the analysis. One of the major promises of this study is that it represents an initial effort in providing a comprehensive set of interstate comparisons which can be used for both measuring and assessing the level of state financial support. The complaint is often made in postsecondary education that decisions are made on the basis of simple high and low distinctions, without sufficient reference to the actual characteristics and distinctive features of the system being decided upon. By providing a starting mechanism for the fuller examination of the dimensions of postsecondary support, it is hoped that the study will encourage the pursuit of questions to the point of greater understanding. Implicit is the need for an interactive relationship between state and institutional officials in examining the components of state support. Such a relationship implies mutual involvement in the use of these analyses and the provision of further supporting information where needed. It also implies a process of mutual exploration, not simply post facto justification, in which the answer or conclusion comes first, followed by facts and analysis constructed to fit. This might be termed the grasshopper effect—a lot of jumping around until the suitable explanation is found. However, to the extent that a reasoned analysis of factors lays out the jumps in the short run, it encourages misuse of data through the selective use of only those factors which are favorable. Such misuse cannot be totally prevented, but a strategy of trying to describe the "full picture" and disseminate that description appears in the long run to be the most viable strategy.

Related to this concept of comprehensive treatment of an issue is an approach which focuses on dual accountability. In the context of an analysis of state

Table 1

Profile of State and Local Support
of Higher Education and Related Factors, in Three States
1973-74

	State and local higher education support measures				Distribution patterns of state and local support to public institutions (per public student)						State and local support related to public higher educational institutional expenditures					
	Public sector			Private sector	By type of institution			By program purpose			Universities		Four-year institutions		Two-year institutions	
	Per capita	Per public student	Per public res. student	Per private student	Univ.	4 year	2 year	General purpose	Sponsored research	Other sponsored programs	$ exp./ student	State portion	$ exp./ student	State portion	$ exp./ student	State portion
U.S. Average	$49	$1881	$2036	$262	$2174	$1972	$1438	$1833	$14	$35	$4130	53%	$2913	68%	$1764	82%
California	79	1938	1972	213	3506	2304	1509	1887	3	48	7316	48	3599	64	1445	104
Colorado	57	1504	2021	16	1306	1577	1412	1441	10	52	3633	36	2719	58	1896	74
New Jersey	36	2013	2082	346	2394	2100	1356	1964	16	32	3729	64	2979	70	1885	72

	Support from selected nonstate sources to public institutions (Per student)		Selected access measures		State financial capacity		State spending for social programs	
	Federal support	Tuition revenues	Public enrollment No. of persons 18-20	% of enrollment at pub. institutions	Tax revenues ------- capita	Tax revenues as % of tax capacity	Total per capita state expenditures	% of expenditures for higher education
U.S. Average	$434	$503	.46	75%	$623	100%	$ 940	5.4%
California	420	238	.70	88	773	112	1119	7.1
Colorado	597	660	.60	88	601	106	954	6.1
New Jersey	259	674	.36	73	680	112	978	4.0

financial support, two-sided accountability implies that state funding be evaluated from two perspectives: that of institutions and students (the adequacy of support) and that of the state (the ability to provide this support). While there are a variety of dimensions to these two perspectives, each focus must be included in the analysis to reflect accurately the dynamics of the financing issue. These include critical analysis of the characteristics of postsecondary education in the state, student enrollment rates, state tax capacity, and competing social needs. These and other factors have been included in the study.

Related to the concept of dual accountability are analytical efforts which include an analysis design that can be used to clarify jurisdictions of those who do the funding and of those who receive funds. One example in this regard is the identification of the extent to which funds provided are legally restricted to specific uses, such as contracts for sponsored research. To the extent that uses are prespecified, they remove certain degrees of accountability from recipients by preempting portions of management prerogatives. Such prescription reduces the management flexibility needed to determine whether a specification which was appropriate at one time (appropriations) remains appropriate at a later time (program delivery). An illustration of this can be found in the rapidly changing expenditure needs for utilities. A good institutional manager will be flexible in shifting some funds to keep classrooms adequately heated although that may take away from available instructional dollars. Demands of accountability taken to the extreme would lead to instruction in cold, dimly lit classrooms.

While the analysis of state support contained in this study is probably the most comprehensive of its kind to date, the topic warrants substantial further study. A number of important extensions can be identified. For example, because of the unavailability of data to support the analysis of such programs as vocational education, proprietary institutions, and adult education programs, the full range of postsecondary state offerings have not been included. Yet given state concerns in the intersector tradeoffs among all postsecondary programs, the importance of including the full spectrum of alternatives is stressed. It would also be desirable to have such analyses which portray states' profiles over a longer time period, making it less difficult to evaluate the extent to which a state's financing profile has changed.

B. Data Concerns. Given the extent to which state-institution relations have centered on the issue of data reporting, an important dimension of this study is its use of existing data rather than the initiation of new data collections efforts. This approach recognizes the high costs associated with adding another layer of reporting requests on higher education institutions, costs which institutions most frequently are asked to absorb. In addition, this strategy is seen as an important mechanism for assessing the utility of existing data collection efforts. For example, Higher Education General Information Survey (HEGIS) data collected by National Center for Education Statistics (NCES) are regularly collected, but few documented uses of these data exist. If they are not valuable, they obviously should not be collected. If they have utility, it should be documented to provide a clear incentive for those reporting the data. The importance of recognizing this connection between data use and data accuracy is critical. This study provided one case example which can be used to improve future data collection efforts. (Mechanisms for achieving this result and funneling the data-related experiences of the study are being explicitly pursued. Following the completion of the field review of the 1973-74 study, a position paper for dissemination to data collectors is being developed by the study staff and project reviewers.)

There were a number of other advantages associated with the use of existing data. Their use is more timely than new collection efforts. In addition, the data sources used provided extensive detail as a back-up source for other users who may wish to pursue the topic. Further, the ongoing nature of these data sources provides assurance that these analyses can be replicated in future years.

There are, however, numerous pitfalls associated with the use of existing data. One is that such data do not always readily match the research design of

Table 2

Comparison of 1973-74 Data For
Combined Institutional and Student Appropriations
(Millions of Dollars)

	Chambers 1973-74 (State only)	Glenny-Ruyle 1973-74 (State only)	HEGIS EDSTAT II-Boyd combined 1973-74 (State & local)	HEGIS EDSTAT II-Boyd combined 1973-74 (Local only)
Alabama	$148	$138	$142	$ 2
Alaska	23	missing	20	*
Arizona	136	116	155	24
Arkansas	73	74	76	*
California	1142	1225	1658	405
Colorado	134	139	141	5
Connecticut	120	120	119	1
Delaware	34	29	31	*

*Less than 1

secondary users. Another is that the accuracy and credibility of any data set is always open to question. In fact, the number of data values often appears to be related to the number of data collectors. A graphic example of this problem is shown in Table 2. Three different sources of information about state support levels are shown, and in only a few states do the numbers agree.

C. Comparative uses of data. Given the absence of absolute standards or benchmarks, states and institutions have relied on the use of comparisons for assessment and evaluation. While such comparisons can provide important references when properly applied, the process of making comparisons is an extremely difficult one. There is an initial problem in identifying the units to be compared. Should only like units be compared (for example, one research university with another) or is it appropriate in assessing interinstitutional financing tradeoffs to compare different units (a four-year school with a two-year institution)?

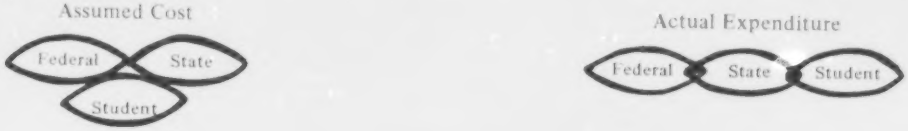

Figure 1. Illustration of the difficulty of obtaining truly comparative cost data.

While this study provides no mechanism for limiting any form of comparison, the intended methodology is one in which comparisons are made in the context of extensive descriptive information. This approach is intended to clarify the similarities and differences of the units being compared.

Another problem which complicates efforts at comparative analysis is the difficulty of obtaining truly comparable data due to the diversity of accounting procedures, calendar systems, and operating modes. An example of this is a recent health science cost study which began with an assumption that cost components were federal capitation grants, state appropriations, and student fees. These sources of revenue can be identified, but as they comingle in an actual operation, their simple direct sum is not an adequate measure of the cost to teach the discipline. The Venn diagram in figure 1 illustrates the problem.

The point simply is that the accounting frame of reference requires mutually exclusive data entries, whereas real support must consider the joint characteristics of these systems.

In recognizing data comparability problems, extensive effort has been expended in this study to document the specific types of data problems which exist, and the extent to which specific states have identified case examples of these problems. Such documentation provides an important interpretative tool for those reviewing the analyses, as well as a firm basis for efforts to improve future data collection procedures.

Another danger associated with comparative analysis is the tendency by some users to convert average values to standard values. While it is for this reason that the present study has attempted to provide a more comprehensive description of the reasons for differences in support levels, the potential to ignore a full state profile and instead concentrate on simple level differences does exist.

Summary

The Statewide Analysis Project of the NCHEMS at WICHE has been presented for information purposes to institutional researchers. Existing data for FY 1973 and FY 1974 have been catalogued and analyzed. Data problems have been exposed and interpretive factors have been outlined.

Promises of this project have been stated in terms of the extension of analyses on the topic to better explain differences in support patterns, better utilize existing data, improve future data collections, and identify some important aspects of comparative analysis. Pitfalls have focused on the potential misuse of data, the inaccuracy of existing data, and the pressure to average down.

An examination of the project process and results should provide institutional researchers with ideas for extension of the work and an ability to cope with the pressures associated with analyses of state financial support of higher education.

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CONFLICT IN STUDENT OUTPUT STUDIES: NATIONAL AND STATE VS. LOCAL NEED

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In the past, almost all student follow-up studies designed to measure output have been organized along similar lines. The target has consisted of populations or samples of (a) graduates of an institution, (b) dropouts from an institution, or (c) longitudinal entering classes. These groups are almost always cross institutional or very broad in nature.

The output measures have centered around continued education, job situation, mobility, reason for leaving, general evaluation, and sometimes measures in change of attitude or perception. Continued education measures center around the new institution, grade-point performance, new degrees pursued, or relatedness of field at the new institution to field at the target institution. Job information might include salary, skill level, and job-relatedness to major at the target college. General evaluation would center around general ratings, services received, or groups of courses taken. There are a number of measures on the market that measure attitude and perception change.

These kinds of studies impress and are encouraged by national educational organizations, national educational professional groups, accrediting agencies, and state governing agencies. Many journal articles are written that analyze such data and make comparisons of data across institutions. However, at the institutional level such studies are of little value except to impress the external community.

Needs of the Local Institution

Consider how a local manager could make any decisions on such findings as an increase in dropout rates, students performing poorer or better in their continued education than students at comparison colleges, an increase in students leaving their major field, an increase in the mobility, a change in the reasons for leaving, or less attitude change among students than at comparison institutions. Even if such findings were verified and mutually agreed upon as serious problems, there would be little an institutional officer could do. Such possible courses of action as changes in admission standards, changes in grading standards, changes in teaching methods, changes in curriculum, or expansion or reduction of programs would have to be carried out at the department, division, or the major area level.

Managers at the departmental level could not make these decisions on the basis of broad general institutional data. They demand specific data about their students. The institutional follow-up studies, which were so impressive to the external agencies and the journal audiences, are of little value to the managers who must make decisions on the basis of the implications of follow-up studies.

This author has carried out a number of broad institutional follow-up studies which include short- and long-term follow-up of graduates, follow-up of dropouts, and longitudinal studies. However, in response to the decision-making manager, this author has now designed a number of specific surveys for major areas of study. These specific surveys differ in two major ways from the broad institutional follow-ups.

How Specific Surveys Differ From Traditional Institutionwide Outcome Studies

First, the target population is different. The institutional studies sample all the graduates as well as all the drop-outs or entering classes. On the other hand, for a specific survey, each manager will define the target population differently. Second, the output data is different and much more specific. Job information can be obtained that pinpoints a detailed job description relating to the major field. Specific evaluations are made about individual courses and services offered by the target program. In some cases, attitude change measures can be obtained when they are related to program objectives. In addition, future education plans, mobility, and other status data of a general nature can be gathered.

Examples Which Aid the Internal Decision-Making Process

There are a number of specific follow-up studies which have been conducted at Harper College that can be cited as examples of how management has used follow-up studies to make academic decisions. These examples make clear why these specific follow-up studies were needed for decision making and why the broad institutional type of follow-up studies would not have sufficed. (See references.)

Business Fields

All students who had graduated with an associate degree in secretarial science were followed for a year after leaving. Results of the survey showed over 75 percent of these former students were working as secretaries. In evaluating education at Harper, many courses were rated as very beneficial while some electives were rated as marginal. This helped academic advisors determine which electives would be recommended for new students and which would be of most benefit to them later on. The results also indicated a very high percentage of the graduates were required to do statistical typing; this knowledge helped determine future course emphasis.

In another follow-up study, students who had declared themselves a major in supervisory and administrative management were surveyed one year later. Results of the survey showed that over 80 percent remained in the field, indicating that the coordinators could safely expand the program without risk of flooding the job market. Many former students indicated that they wished they had developed more oral and written skills

for use in business. This finding led to the development of English courses designed specifically for business majors.

The marketing, mid-management coordinator selected students who had accumulated 48 or more hours and who had taken three or more core courses as the target population for a follow-up study. This study found that three-fourths of the students remained in the field after leaving Harper and that they earned, on the average, a higher salary than the graduates of any other career program at Harper. Further, over 90 percent had no difficulty in finding a job. Again, this indicated that this particular program should be expanded, and it was. The survey also indicated that these students used counseling to a much greater extent than other career students, and, thus, it was known that expansion of the program would have a greater impact on the counseling services. In addition, the survey indicated that additional courses in human relations and marketing research would be helpful. Both of these findings were incorporated into the curriculum modification.

In still another follow-up survey, any student who had taken one or more core courses in data processing over a five-year period was followed. The study demonstrated that the program was serving either to support people in other fields or to upgrade skills of people already on the job. Few students were being prepared to enter the field for the first time. A number of course areas were identified as being useful as non-credit, continuing educational offerings that could supplement the present program.

Service Field

Students who at one time during a three-year period had declared themselves as interior design majors were targeted and sent a follow-up questionnaire. Results of the survey produced a profile of those former students who were working. Over three-fourths of those working were on jobs related to interior design, and these jobs were divided into 23 different classifications. This allowed the coordinator to determine how related the curriculum was to the actual job content.

In another study, students who had majored in criminal justice were followed. It was noted that a number of graduates with an associate degree in criminal justice and no experience were having difficulty finding positions in the field. This finding prompted an effort to increase the academic advising services for these students. In the future, students who have had no experience in the criminal justice field will be advised either to continue their education to the bachelor's degree or prepare for a very specialized technical area.

All students who had taken the final child care seminar course were surveyed a year after leaving Harper. This study indicated that few could find full-time jobs in the field, and those who could were working at very low salaries. As a result of this finding, the growth of the program was curtailed, the leadership of the program was changed, and graduates of the program were advised to utilize some of their skills in a wider range of jobs only somewhat related to child care.

Students who had indicated their major field was legal technology were surveyed one year after leaving Harper. This study indicated that former students felt they were not working up to their potential. Over half indicated they performed some typing. Also, it was difficult to find enough positions in attorneys' offices. As a result, in-service continuing education programs for attorneys were designed to demonstrate the proper use of legal technicians. In addition, new positions were found in a variety of agencies where legal technicians could work up to their potential.

Health Fields

Dental hygiene graduates, over a three-year period, were followed, and this survey found that 99 percent of these graduates were working in their field. The favorable job situation meant the program could expand. However, the survey also indicated that graduates felt they were capable of performing many more expanded duties than they were now permitted. Thus, even though these graduates were satisfied with their positions at the time of the survey, their high level of qualification could lead to dissatisfaction in the future.

Follow-up studies have also been conducted among graduates of the nursing program. These surveys indicate to what extent nurses are required to perform in 36 different skill areas, and, thus, allow a detailed relevancy comparison between the curriculum and the job requirements. In addition, a number of working relationships are identified, as well as measures of effectiveness of preparation in each of these areas. These nursing follow-up studies uncovered that Harper graduates felt well prepared in all areas except leadership. This seemed important since over 80 percent of these graduates were required to exhibit supervisory or leadership skills. As a result, a continuing education program was designed to provide leadership and supervisory training for persons in the health field.

Technical Field

In the architectural technology program, all former students who had taken three or more core courses were followed. This study revealed that about 64 percent were working in the field. Their work was broken down into 28 different classifications, which provided a very descriptive work profile of the former students. In addition, salary and geographic location information was obtained on these Harper alumni.

This study was used as a recruiting device to attract new students to the program. Students, after reading the report, discovered what they could realistically expect to earn and what type of work they would most likely be doing. Thus, students who did enroll in the program could be expected to have more realistic expectations.

Noncredit field

In a study now underway, former participants in the women's program are being followed one year later. The purpose of this study is to determine the extent to which these participants have gained in self-confidence and have widened their horizons. The outcome of this study will determine whether this program should be expanded, leveled off, or curtailed.

Conclusion

The specific studies described have provided very unique information, such as a detailed job analysis profile and very specific evaluation data. Moreover, this data has been collected from a very specific target population of former students. These two factors have

allowed managers to make informed decisions concerning curriculum revision and development, expansion, academic advising services, job placement services, and recruitment. The traditional, institutionwide follow-up studies would have provided little benefit to the managers in making such decisions.

It is not the purpose of this paper to assert that the traditional, institutionwide follow-up studies are worthless and should be discontinued. Institutions still must justify their existence to the local community, to the state, and to the federal government. Moreover, professionals still must seek visibility in their professional associations. For these purposes, the traditional, institutionwide follow-up study is the only appropriate approach. This paper asserts that an institution must engage in two types of student outcome or follow-up study. One type will satisfy external pressures while the other will be an extremely valuable aid in the internal decision-making processes. This paper has shown that these two types of studies cannot be mixed in one outcome effort. Rather, the institution must commit itself to the conduct of two different types of outcome studies for two widely different purposes.

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THE ORGANIZING, FINANCING AND IMPLEMENTING OF EXPANDED ADULT AND CONTINUING EDUCATION FROM STATE AND REGIONAL POINTS OF VIEW

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The following discussion is confined primarily to the seven midwestern states in which the Committee on Interinstitutional Cooperation (CIC) universities are located: Michigan, Ohio, Indiana, Illinois, Wisconsin, Iowa and Minnesota.

That there has been a substantial increase in educational offerings for adult students in recent years hardly needs demonstrating. The coming on the scene of the British Open University with 25,000 students its first year was a dramatic event at the beginning of this decade. Shortly thereafter, the new commissioner of education in New York, Ewald Nyquist, announced two equally dramatic programs: Empire State College and the Regents External Degree Program. Meanwhile, the number of students engaged in the study of higher education who might be classified as non-traditional students has been steadily rising from at least the beginning of the seventies, and there appears to be every indication that this trend will continue and may, indeed, be the major source of growth in higher education in the years, and perhaps the decades, remaining in this century.

When I came to the Committee on Interinstitutional Cooperation in 1970, increased attention to continuing and non-traditional education emerged very quickly as one of the major trends CIC would give attention to over the next several years. In the spring of 1971, I visited the Open University in England and was much impressed by what I saw. Upon my return, I reported to the presidents of my universities and presented them with a draft plan for the establishment of what I called "the open university of the midwest." The presidents were polite, but it was clear that this was a direction in which they did not see themselves going. After the air had been let out of my trial balloon, I went back and considered what else CIC might do to stimulate non-traditional education in our states and region. It occurred to me that nearly all of our universities had been, for many years, engaged in a variety of ways in non-traditional and continuing education. Nearly all of them have developed elaborate and expanding continuing education programs. In some of our states, this involved faculty members from the main campus traveling to various parts of the state to offer courses in the evenings or on Saturdays. In other states, radio and television networks have been established, and courses are broadcast from the home campus to locations around the state. Six of our universities have correspondence education programs and together offer several hundred courses. All in all, it appeared to be a rich array.

We next asked ourselves what could be done with what already exists. Since, in days of increasingly tight budgets, it is not likely that substantial additional sums of state-appropriated monies are going to be available for new or expanded programs of any kind, we decided as a first step to make a study of what the present resources were and what the impediments were to making existing resources fully available to non-traditional students. To this end, we secured funding from the College Entrance Examination Board and commissioned three inter-related studies by Deans Dewey Stuit and Robert Ray of Iowa and Professor Russell Burris of Minnesota. These were entitled *The CIC Study of the Non-traditional Student* and were published in June of 1973. The three authors agreed on a joint set of recommendations to the CIC universities and anyone else interested. I would like to run over briefly the principal recommendations of the reports, because they indicate what can be done to make more readily available access to already existing programs within our universities. Thus, the increase in cost to the institutions is minimal.

The first recommendation is that the universities need to examine their missions with respect to non-traditional students. In some, there has been a proliferation of programs aimed at non-traditional students and operated by individual colleges or schools, or even by departments. In many instances, there is apparently little or no coordination with other parts of the university.

With respect to admissions, it was suggested that provision should be made to permit the non-traditional student to enroll for individual courses without necessarily satisfying regular admission requirements. After a specified period of study (e.g., 30 semester hours), the individual's qualifications for further study would be assessed to determine what requirements must be met if the student desired a degree.

Another recommendation was that special counseling facilities should be available for the non-traditional student. Such a counseling service should be staffed with persons who have acquired a knowledge of the special problems faced by the non-traditional student, both on and off campus. At the least, every university should clearly indicate where non-traditional students should go for information. Counseling for non-traditional students should be available before enrollment, and up-to-date bulletin statements describing opportunities for non-traditional students should be readily obtainable.

Since non-traditional students often have had experience which is the equivalent of college level work, provision should be made to grant credit through an examination program such as that provided by the College Entrance Examination Board in its College Level Examination Program or locally constructed tests. Students should be allowed to take examinations before enrolling, the credit to be held in escrow until a certain amount of credit has been earned in courses.

With respect to the earning of degrees, while the traditional B.A. and B.S. degrees serve, very well, the

needs and purposes of most traditional students, the non-traditional student may well be more interested in greater flexibility in his or her studies than in meeting the requirements for a traditional degree. For these students, a Bachelor of General Studies or Bachelor of Liberal Studies degree may provide a tangible record of academic achievement without requiring the completion of a considerable list of course requirements. Consideration should also be given to the awarding of diplomas or certificates for the completion of recognized programs of study which may fall short of the bachelor's degree. Some new credentials should be provided adult part-time students that will provide milestone recognition and encouragement at points along the way to degree achievement such as one-year diplomas, two-year certificates, and the like.

Another proposal of the three authors is that institutional policies allow the development of credit offerings in shorter time frames than the traditional quarter, semester, or summer sessions so that the special needs of professionals and other clientele groups may be more readily met.

On another topic, the typical college major is likely to call for the completion of a number of specific courses which the non-traditional student may have difficulty in scheduling. In the development of degree programs, it should be noted that broad majors such as humanities, social science, fine arts, and biological or physical science may often serve the interests of non-traditional students more readily than the traditional, narrower major.

With respect to fees, since the non-traditional student will often be following an irregular schedule, it would be to his or her advantage to pay fees on a per credit hour basis rather than in a lump sum for a term. Flexibility in the adjusment of fees would work to the advantage of the non-traditional student. In the administration of financial aid programs, institutions should give due consideration to the financial needs of part-time, as well as full-time, students.

One of the most difficult problems faced by the non-traditional student is the residence requirement. If an institution is liberal on this point, it greately eases the problem of meeting the resident requirement for a degree. On the undergraduate level, completing the last thirty hours in residence, or forty-five of the last sixty, or the first ninety are requirements which can be managed by the non-traditional student, particularly if courses taught under the supervision of members of the institution's faculty, at whatever appropriate site, are counted as residence credit.

The non-traditional student is likely to have taken work at a number of institutions. Converting this work to credit which is to be counted towards a degree in a particular institution is a problem. Liberal transfer of credit policies and a validation of credit by examination are measures which will ease the problem of the non-traditional student in meeting the requirements for a degree.

Institutional policies should be reviewed to determine that full-time and part-time students are treated equally. Especially, such policies should be reviewed as they relate to the earning of credit by examination, independent (or correspondence) study opportunity, and fees.

Correspondence study should be encouraged in the overall educational program for non-traditional students. Institutions should examine their present limits on such study in the fulfillment of degree requirements.

These, then, are the principal recommendations of the CIC Study of the non-traditional student which appeared three years ago. So many changes have occurred in the CIC universities since that time that the College Entrance Examination Board has agreed to finance a follow-up study of Dean Ray's portion of the report, which is the most comprehensive of the three. During the summer and early fall, Dean Ray will visit the eleven institutions and detail the changes which have occurred on each of the campuses during the past three years. His study will be available sometime during the 1976-77 academic year.

Perhaps the most visible change related to the non-traditional student is the fact that now, for the first time in their long histories, three of these universities will be offering bachelor's level degrees for non-traditional work. During the past three years, the University of Wisconsin System, the Indiana University System, and the three public universities of Iowa jointly have won approval for bachelor's level programs for non-traditional students. In at least one of these cases, we have been told, the reports referred to above were very influential. In addition, a host of changes in regulations and requirements have been made in most, if not all, of the universities which ease the path of the non-traditional student in pursuing his or her educational goals.

In addition, we have looked around in our universities for opportunities for a genuinely joint approach to the advancement of non-traditional education in our region. The most promising development we have come up with is a proposal for a bachelor's degree program which may be earned in part or in whole by means of correspondence study.

Six of our eleven universities have had long and extensive experience with correspondence education. During 1975, some 18,000 students were taking correspondence courses in the six university programs. Together, these programs offer several hundred individual courses. Many of these are, of course, duplicative. But when put together, they come close to having sufficient courses available for majors in a variety of fields. Our plan, for which we are seeking funding, calls for the development of sufficient new courses to enable us to have available for students complete majors in up to ten academic fields. The students will be able to earn their degrees through the new degree programs at Indiana, Wisconsin, and Iowa, or alternatively through the Regents External Degree Program in Albany. As far as we are aware, this will be the first American bachelor's level degree program which can be earned exclusively through the correspondence route.

The programs of New York State and the University Without Walls have brought into being new instrumentalities to further the education of non-traditional students. CIC has elected to build on what our universities already have in place. To get our studies and projects completed, we have depended on grants from private and public funding sources. Once our new courses have been completed, they will be used by our six universities with correspondence programs according to the policies of each institution.

PRESSURE POINT ON CAMPUS: ACADEMIC PROGRAM PLANNING AND RESOURCE ALLOCATION IN CONFLICT WITH THE BARGAINING TABLE

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Collective bargaining is not a new factor in American life. Anyone familiar with the historical development of the American industrial complex would say that the bargaining table has existed since the early days of industrial development. Collective bargaining has also been present on the college campus for some time—having arrived in the early 1940s when maintenance employee, food service employee and clerical employee unions bargained over terms and conditions of employment in a setting that paralleled the collective bargaining process in the industrial sector. What is new to the campus is collective bargaining by a unionized faculty. The past few years have found a steadily increasing number of institutions engaged in collective bargaining with their faculties. *The Chronicle of Higher Education* (1976) now lists over 400 institutions of higher education in the United States where the faculty is represented by a collective bargaining agent.

Another new activity that has emerged across the campuses of this country is long-range academic program and resource planning. National studies have increased awareness within the higher education community of the necessity for academic program and resource planning. One of these studies is entitled *More Than Survival* and was written by the Carnegie Foundation for the Advancement of Teaching in 1975. In a chapter entitled, "What Institutions Can Do", the need for program and resource planning is stressed and some strategies and recommendations for such planning activities are offered.

> "1. That institutional leaders prepare analyses of their institutions to determine, as accurately as possible, the present situation and the factors shaping the future course. These analyses should be used to inform their colleagues and constituents and should be part of a larger effort designed to create attitudes receptive to and conditions conducive to change.
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> "2. Each institution, if it has not already done so, should develop an overall strategy for flexibility in the use of funds, assignment of faculty, utilization of space and effective processes to make the necessary long-range decisions."

These two recommendations call for serious efforts to grapple with the future using the decision-making processes of today. Since, embodied in both collective bargaining and program planning are decision-making processes which focus on the future, these two processes must interact when they are both present on the same campus. It is this interaction and the inherent nature of each process that motivated the title for this presentation.

Some Examples from Central Michigan University

I will attempt to illustrate the inherent conflict between collective bargaining and program planning by sharing with you some personal experiences. Central Michigan University (CMU), the university I currently serve, was one of the first single campus, public four-year institutions of higher education in the United States to enter into a collective bargaining agreement with its faculty. The year was 1970. Since that time, two multiple-year agreement have been negotiated. The first agreement was for the three year period 1971 to 1974, the second for the years 1974 to 1977. Collective bargaining with a faculty bargaining agent has been functioning at CMU for some six years.

Concurrent with the collective bargaining process at CMU has been a long-range institutional academic program-planning and resource-allocation system. This system is an effort to shape the future of the university by a deliberate educational and decision-making process. Resources of the university are allocated to the various segments of the institution in response to deliberate decisions regarding basic program continuance, program improvement, new program development and program deletion. Charles J. Ping, former provost of CMU and now president of Ohio University, captured the essence of this long-range planning and resource allocation sytem when, in 1973, he stated:

> Long range planning involves the effort to anticipate and describe the future and the effort to shape that future by intelligent action. Institutional planning results in the determination of resource allocations. The two, planning and allocations, represent one system; they form a coherent whole if the process is to have value and consequences for institutional life.
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> The planning and allocation system is designed to describe the future of the institution as a coherent whole and to provide for allocation of resources which support this description. The process attempts to rationalize decision making by minimizing the *ad hoc* character of decisions. No important decision can be made in isolation from all other decisions because every allocation affects all other possible allocations.

This last sentence is the key to the interaction, or conflict, between a bargaining table and academic program planning.

Examples of Conflict

Allow me to now share with you some specific examples of conflict between the bargaining table and an academic program-planning and resource-allocation system. My first example is probably the most obvious. Agreements at the bargaining table fix levels of faculty compensation and, thus, limit

the resources available for other allocations through the planning process. Since the total dollars available for allocation is not inexhaustible, a higher level of faculty compensation results in less resources available for other allocations. Conversely, decisions made in planning the academic future of an institution—goal description, establishment of objectives, program changes—eventually involve resource allocation. Program planning that incorporates an increasing share of the total resource dollars produces a limiting parameter for any possible collective bargaining agreement.

Often this dollar conflict produces additional conflicts with third parties who are both internal and external to the institution. Before additional comment on this, I will illustrate this "growth of conflict" by briefly examining what are the flexible portions of an institutional budget and their relationship to parties not directly involved in either the bargaining or planning processes. The example is a state supported institution.

Simply stated, the two flexible revenue portions of such an institution's budget are (a) state appropriation, and (b) tuition (number of students). The two flexible expenditure portions of the budget are (a) compensation level, and (b) faculty/student ratio (workload and number of faculty).

Compensation decisions made at the bargaining table can lead to a decision to increase tuition. This decision might quickly produce conflict with a third party, the student body. Or, instead of a decision to increase tuition, the decision might be to seek increased state appropriation. This intent might even more quickly lead to conflict with the state funding agencies. Conversely, academic program planning decision can alter faculty/student ratios, possibly producing conflict with accrediting agencies, review boards and even specialized student groups.

A second example of conflict is in the realm of staffing strategies. Job security has become a very important goal for faculty bargaining agents. Invariably, job security is related to the institution's tenure policy or staffing strategy. The faculty bargaining agent will strive for minimal probationary time, faculty-based tenure approval structures, binding arbitration, and so forth, in order to increase the feeling of job security among its members. Tenure, historically the result of an explicit academic judgment, is viewed as the bargaining member's right, to be claimed after a period of employment. Collective bargaining seeks the continual erosion of the acceptance of the need to make explicit academic judgments. Conversely, the planning process, aware of the growing and changing content of disciplines and the shifting of student interests, will have as its goal a flexible and contemporary staffing strategy—not a rigid or "quick-to-tenure" strategy. The ability to respond to change through a flexible staffing pattern will be a priority of the planning system. Such flexibility can in part be obtained through a systematic pattern of temporary non-tenure track appointments instead of regular tenure-track appointments. Such temporary appointments can be reallocated on an annual basis in response to academic program change and student interest. With no tenure expectation attached, part-time or seasonal appointments in response to specific needs are possible.

A third example, closely related to staffing strategy, lies in mandatory retirement ages and early retirement programs. Understandably, the faculty bargaining agent will be hesitant to support lower retirement ages or early retirement programs without clear evidence of positive return to its membership. The bargaining agent will resist attempts by the institution, through its academic planning process, to change retirement ages or to encourage early retirement unless the academic planning process can also demonstrate a positive result for the individual who will be affected. Conversely, as already noted, the planning process will seek to foster staffing flexibility. An immediate way to accomplish a portion of that flexibility is through increased retirements or phased retirements. Faculty positions that become vacant because of retirement can be reallocated to other program areas or be used to sustain painless retrenchment. At least one institution, Youngstown State in Ohio, has been able to formally begin to resolve this conflict by incorporating early retirement language into its negotiated agreement (1975-77).

A fourth example of conflict is in the governance of academic program development. The planning process seeks to encourage change and to foster the development of contemporary and responsive academic programs in light of student interest and societal need. Such new programs are subsequently allocated the resources necessary for development and implementation. These resources are most often reallocated resources; that is, resources that were formerly allocated for another purpose but are now being allocated for this new purpose. This reallocation process is most often in direct conflict with the bargaining table where the issues of campus governance structures and processes concerned with the substance of academic program are being debated. If the reallocation of resources, such as faculty positions, affects the employment conditions of bargaining unit members, then the bargaining table will also address this issue, but in all likelihood, with different motives. Instead of the desire to foster change (remember the first recommendation of the Carnegie Foundation.), the bargaining table, which is basically a conservative process, will strive to continue the *status quo* as it reflects the interests of the bargaining unit.

A fifth example, closely aligned to the governance of academic program development, is the conflict surrounding entirely new forms of educational instruction and delivery of instructional programs. Innovative non-traditional educational programs with such titles as University Without Walls, College of Life-Long Learning, Institute for Personal and Career Development, etc., which extensively utilize instructional technology to deliver their academic programs to individuals and places far removed from any campus, offer little area or opportunity for traditional faculty involvement in academic control. Often a course is directed by a person, not from the campus and thus not a member of the bargaining unit, using various instructional packages (programmed modules, tapes, television, and so forth) which have probably been developed with little on-campus faculty involvement. The bargaining unit can easily view such new forms of education as threatening to their own security and sense of academic worth and may seek to limit or completely stop such developments.

Two final examples involve the student body. I have already alluded to the first which is the most obvious, since it has been written about and debated for some time. I refer to the involvement of students in the collective bargaining process, either as observers or as negotiating team members. Neil S. Bucklew, former vice president for administration at CMU and, more recently, provost of Ohio University, identified the conflict inherent in the bargaining process when students are involved:

> Students have traditionally expressed an interest in various faculty employee policies and practices. Because of the significant impact of bargaining on the academic personnel budget, students can also view their tuition costs as being directly affected by collective bargaining negotiations with faculty. Various faculty employment conditions have been the subject of student newspaper editorials and general student complaints for some time. Many students would indicate not only an interest but also a sense of deserved involvement in such matters for negotiation as faculty workload and class size. (1973)

Such student involvement in the bargaining process will conflict with faculty-centered resource allocation. Students view the resource demands of the bargaining table as being in competition with resource demands of student programs, and they will attempt to minimize the former in preference to maximizing the latter.

The second example of conflict involving the student body is not as directly identifiable as their direct involvement in the bargaining process itself, but yet it is more profound. The academic planning and resource allocation system is responsive to student interests in conjunction with the role of the institution. Within the context of the role and mission of the institution, students, by virtue of their educational program interests, drive the planning and resource-allocation system. Some planners have referred to this process as "the enrollment-driven system" or, stated more grossly, "students shaping the future by virtue of their feet." This responsiveness of the planning and resource-allocation system to student educational program interests is in direct conflict with the bargaining table. The issues at the bargaining table are mainly employee motivated or driven by faculty interests. In fact, very often the faculty bargaining position will be to negotiate over institutional response to change and student interests. Occasionally, the faculty interests present at the bargaining table coincide with student educational program interests, but congruence is rare. For the most part, the interests are at odds.

Some Responses to Conflict

Lest you accuse me of offering no possible solutions to some of the conflicts that I have described, allow me to cite some attempts at conflict resolution that have been made at various institutions. I offer these as suggestions, not as promises. What worked at these institutions might not work for others in the same way. I do believe, however, that some of this work can be adapted to provide potential for conflict resolution.

In response to the conflicts that involve third parties—most notably the students—some institutions, either independently or under state laws, have involved students, either as direct observers to the bargaining process or as members of the respective negotiating teams.

I have already mentioned that at least one institution (Youngstown State) has, as part of its negotiated collective bargaining agreement, early retirement language. I would also refer you to two papers on the topic of the financial implications of early retirement. The first was published in the February 1974 issue of *College Management* (See Kieft, Financial Implications of Early Retirement) while the second was given as an address at the 1975 national convention of the College and University Systems Exchange, with subsequent publication in the *Proceedings* of that convention (See Rieft, Early Retirement Systems). Both of these articles focused on the development of a simulation model that could be used to measure the financial impact of early retirement on any individual. The model attempted to answer two questions regarding early retirement:

1. What is the difference in net take home pay at a given age between a person who is working, as compared with a person who has retired?

2. What would be the difference in annual retirement income for each year of a person's life between a person who continues to work and one who retires early?

The first question was short-range, the second long-range. The information needed to answer these questions was compiled, and a computerized costing model was developed which provided guidelines, on an individual basis, for any faculty member. The computerized software for the simulation model is available from the College and University Systems Exchange National Library for institutional use.

A great deal of conflict can be avoided if the suspicion and misunderstanding regarding the comparative wealth of the various recipients of resources can be reduced or, hopefully, eliminated. Accurate and understandable information should replace the undocumented claims that often surround both the bargaining table and the planning and allocation process. A specific example is comparative information regarding salary and fringe benefit equity. Information comparing compensation levels within the institution to levels at other institutions can be obtained from a number of sources (for example, American Association of University Professors, National Association of College and University Business Officers, institutional athletic conference affiliations, state coordinating agencies, and certain national surveys).

Just as important as external comparisons is the institution's own internal equity among and within its employee groups. Nothing undermines the effectiveness of a planning and allocation system or the bargaining table as much as the beliefs that certain employee groups, either as a whole or in part, are being unequitably treated. A method for reducing such beliefs lies in the establishment of a systematic program for determining and alleviating inequities. Such a program should involve both the opportunity for any individuals or group of individuals to make their case based upon their interpretations and their information, as well as an institutional procedure for arriving at an independent judgment based upon objective information.

To help in the establishment of such procedures,

There are several articles that deal with techniques for identifying and eliminating salary and compensation inequities within employee groups. The October 1975 issue of the *American Association of University Professors Bulletin* carried an article which focused on a procedure to analyze the fairness of salaries, particularly women faculty salaries, on a college or university campus. (See Bergman and Maxfield.) The July/August 1975 issue of *Journal of the College and University Personnel Association* (Kieft, Salary Equity Adjustments) and the April 1974 issue of *College Management* (Kieft, Are Your Salaries Equal) described the utilization of the statistical technique of multiple regression analysis to identify salary inequities within an employee group and determine adjustment amounts that would help to alleviate the inequities.

Finally, the establishment of a formal special conference capability affords both the institution and the bargaining agent the capability to address conflict whenever and wherever it occurs. Special conference capability, agreed to in the negotiated contract itself, guarantees both parties to an issue an avenue for resolving that issue. It is a way in which the contract parties agree to meet their duty to bargain collectively and at the same time move toward conflict resolution.

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CONCEPTS OF TUITION AS CONFLICTING PRESSURES IN PUBLIC POSTSECONDARY EDUCATION

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Tuition levels vary widely among public institutions, and in the recent past, many institutions have periodically increased tuition charges, often by sizeable increments. These increases are usually accompanied by rhetoric about maintaining quality of programs and faculty, making up the difference between existing tuition revenues and the yearly appropriation from an unfriendly legislature, or keeping pace with the current rate of price inflation. But have administrators, faculty, students, legislators or taxpayers ever asked what tuition is and how it should be conceived? In view of the increasing frequency with which tuition is being raised, and the stark realities of financing higher education in a no-growth period, this question should be asked. Only be defining first what tuition is, can be, or should be, can public institutions understand the causes and effects of setting a particular pattern of tuition charges. This determination will in turn enable these institutions to develop rational long-range, fee-setting policies.

Concepts of Tuition

One can consider concepts of tuition at public institutions in two different ways: (1) as the price of selling or purchasing educational services, or (2) as a form of sales or use tax on a public service provided by the state government.

Within this general framework are several separate ways of viewing tuition, the first of which involves tuition as the sales price of education, analogous to the price of output in the theory of the firm. The microeconomic theory of the firm specifies that the profit-maximizing price and output are determined at the point where marginal revenue equals marginal cost. This is the point at which profits are a maximum. There are obviously some problems with using this conceptual approach to setting tuition. First, it is very difficult to measure marginal revenues and marginal costs for service industries such as higher education. Even the frequently used unit cost study has tackled only average costs, which bear little relation to marginal costs. (Average cost is simply total cost divided by the number of units of output, whereas marginal cost is the rate of change of total cost, or the cost of producing the marginal unit of output.) The second difficulty with this approach is that it assumes that the firm is motivated to maximize profits. It is difficult to assert that public institutions maximize anything, much less profit, although some private proprietary schools may fit this model more closely.

Thirdly, it is difficult to specify the production function of higher education, that is, to state what the inputs and outputs are. Does output comprise student credit hours, degrees awarded, faculty contact hours, scholarly publications? Are students to be considered inputs or outputs? In what way do the many activities of higher education (teaching, research, public service, and so forth) enter into the production function? Lastly, from a practical perspective, it is difficult to imagine that costs and revenues vary widely enough among public institutions to explain the diverse tuition levels observable across the United States. That is, even if the appropriate cost and revenue data could be ascertained and utilized as a basis for setting price (tuition) and quantity (say, enrollments or credit hours) within institutions, other variables and parameters obviously enter into tuition-setting decisions. Because of the need to investigate further these other variables and parameters, and because of the other difficulties associated with the use of this simple theory of the firm, it is difficult to conceive of tuition as the profit-maximizing price charged for educational services.

However, if the firm is a monopoly seller of its product, a different situation may arise. The firm may be either what economists call a "natural" monopoly, such as some public utilities, or it may simply possess its monopoly position because of legal or customary constraints which prevent free entry of new firms into the industry. If the firm can distinguish groups of buyers who exhibit different demands for its services, it can exploit its monopoly position by charging different prices for the same product. Consider as an example a firm in the airline industry which is a natural monopoly because of its high, fixed costs and seating capacity, and which is also protected by federal agencies having authority over fare-setting policies. A businessman taking a brief trip is charged a higher fare than a vacationer who agrees to remain at his destination for a specified length of time or to fly only on certain days of the week. Because of enforced reservation and ticketing arrangements, the airline can easily distinguish these two buyer groups. Promotional excursion fares and other discounts are often implemented during seasons of the year or portions of business cycles when airlines wish to fill seats which would probably otherwise remain empty. Firms who engage in this type of pricing behavior are called discriminating monopolists, inasmuch as they can discriminate among buyer groups. Tuition understood in this context may be a more valid concept than that of a profit-maximizing price for a service, as will be shown in the following section of this paper.

One can consider further concepts of tuition by turning from the perspective of the institution-seller to that of the student-buyer. Students consider tuition as the purchase price of education, although it actually represents only a small portion of their total costs if foregone earnings due to temporary withdrawal from the labor force are taken into account.

The monetary benefits which students gain from higher education consist of increased lifetime earn-

ings.[1] It has recently become apparent that students implicitly engage in cost-benefit analysis and are quick to respond to changes in their perceived costs of, and benefits from, higher education (Freeman and Holloman, 1975). When they perceive reduced job openings and salaries for college graduates, for example, they reduce among themselves their numbers pursuing higher education. This phenomenon has occurred in the past in fields such as engineering, and more recently in teacher training.

Benefits and costs are expressed in present value terms, that is, they are discounted (the opposite of compounded) at some market rate of interest.[2]

Micro-economic theory tells us that a student invests in higher education up to the point where his marginal benefits equal his marginal costs this is the point where his net benefits are maximized. This is analogous to the theory of the firm, in which the firm produces until its marginal revenue equals its marginal cost, at which point the firm's net profits are maximized.

Since students are apparently capable of this type of cost-benefit analysis, one rationale for setting tuition could be to base tuition on the net benefits accruing to students. If tuition were to be charged in this manner, however, it should be based only on private net benefits, which are very difficult to separate from the benefits to society as a whole. Public school systems charge no tuition of students in grades K through 12 because of the general belief that the benefits to society far outweigh the private benefits to these students. But how many of the benefits of higher education accrue to the students themselves in the form of higher lifetime earnings and how much to society in the form of a better educated citizenry? Because of the difficulty of separating private and social benefits, it is difficult to conceive of a system of tuition based upon these net private benefits. For while many observers feel that all benefits of higher education are private, and that, therefore, students should pay the full costs of their education, an equally vocal group argues for low tuition levels as a means of increasing access to higher education.

Given these difficulties in viewing tuition from the perspective of either the institution-seller or the student-buyer, it is perhaps more fruitful to consider tuition as a sales or use tax on a public service with the public educational institution acting as the tax-collecting agency for the state government. One often observes increases in tuition levels being made in order to balance the state government's budget, in much the same way as a retail sales tax is raised. This is particularly obvious in cases where tuition is set by the legislature or some other statewide body, although it is also true in those instances where individual public institutions are free to set their own tuition levels.

The lower tuition is, the more must institutions of higher education rely on state subsidies for financial support of their general operating budgets. However, the regressivity of most state tax structures results in a redistribution of income from lower income groups—those upon whom much of the regressive tax burden falls but who are often less eligible or less interested in making use of educational facilities—to upper income groups, who tend to make greater use of these services. Because the present low tuition levels in most states cause lower income groups to subsidize the education of higher income groups, advocates of the use-tax concept of tuition favor higher tuition levels than most public institutions presently charge, and they also tend to support state tax reform that will reduce the regressivity of these taxes (Bowen, 1974).

The notion of tuition as a sales or use tax is not widely held, but it is probably a more feasible concept on which to base tuition levels than is the notion of tuition as a sales price or purchase price of educational services. If the use-tax notion were more widely held, there would be less brouhaha at announced tuition increases; one seldom hears any commotion over retail sales tax increases. The use-tax concept as a basis for tuition relies on a knowledge of the fiscal structure of the state government, that is, the nature and variety of other taxes and their degreee of regressivity or progressivity. And since even neighboring states can have very different tax structures, tuition levels among states can be expected to vary dramatically (Lile, 1975).

Another concept of tuition, and perhaps at present the most prevalent, is that of making up the difference between state appropriations for higher education and budgeted expenditures of educational institutions. Perhaps the main justification for this concept is the ease of measurement; since appropriations and budgeted expenditures are both known, it is a simple calculation to divide the revenue required by the projected number of enrollees (or student credit hours) to obtain the tuition per student (or credit hour). This assumes, of course, that student demand for higher education is relatively inelastic with respect to price (tuition) and that enrollments or student credit hours are not affected by the tuition level resulting from the calculation. If, however, enrollments or credit hours are, in fact, influenced by tuition levels, it is inappropriate to use either of them as the divisor in the tuition calculation. Implicit in as institution's announcement that a tuition increase of X dollars per student per year will increase revenues enough to balance the next biennial budget in the assumption that the higher tuition levels will not significantly reduce enrollments. This may not be the case, however, because if demand for higher education were extremely elastic, it is even possible that a tuition increase would reduce the total tuition revenues from their levels before the increase. Recent studies indicate that individuals from low-income families respond more to tuition increases that do individuals from middle- or upper-income families, that at any income level a tuition increase reduces the proportion of individuals who attend institutions of higher education, but that the magnitude of demand elasticity is relatively small (Jackson and Weathersby, 1976). Thus, although it is em-

[1] This viewpoint, of course, ignores the cultural and other nonmonetary benefits to be obtained from pursiuing higer education and treats this pursuit as an investment activity rather than as consumption.

[2] For example, this rate might be the one at which a student could obtain a loan to finance schooling. Calculation of present value involves multiplying each benefit and cost that occurs in the future by a discount factor $1/(1+1)^n$, where i is the interest and n is the number of periods into the future the benefit or cost will accrue. This factor becomes smaller as the benefit or cost gets farther into the future.

pirically valid to assume a small degree of elasticity, there is little theoretical basis for such an assumption in setting tuition levels.

Recently more sophisticated techniques of measuring unit (average) costs of higher education have been developed at the urging of cost conscious legislatures and citizens. Based on this development, the most current concept of tuition in many educators' minds is that of a change based upon the actual costs, direct and indirect, of instruction. While this has little economic rationale, it has the advantage of political palatability. Under such a system costs, and hence tuition, are reviewed on some regular basis. Once cost analysis is perfected, the only remaining issue is that of determining what proportion of the calculated unit cost is a fair burden for the student to bear and what proportion should be subsidized by the state.

A recent survey found that several states have adopted such a system of basing tuition charges on average instruction costs per student, with those for state residents set at from 20 to 50 percent of costs and those for nonresidents at 100 percent (Washington Council for Postsecondary Education, 1976). There appears to be no philosophical basis for these percentages, nor has there been any attempt to assess the relative benefits to students and society as one would expect to be the case if tuition were to be based on the concept of private benefits accruing to students. Generally the rationale for setting these percentages has been that they would produce tuition levels comparable to rates in states used for comparisons and that they would approximate the instructional cost share that students have historically borne. Since the adoption of these percentage systems, the only adjustments have been in response to revenue requirements and to comparisons with neighboring or comparison states. The states that utilize this method of setting tuition report that they are satisfied with it. However, they appear to have glossed over the issue of what proportion of costs is a fair burden for students to bear.

Parenthetically, one must realize that in this method the costs upon which tuition is based are sunk (or historical) costs, that is, the simple monetary costs of providing educational services. The costs referred to in the discussion of student cost-benefit analysis are what economists call "opportunity" costs, that is, costs in terms of the highest valued foregone opportunity. Once one makes this distinction between sunk costs and opportunity costs, it may be inappropriate to bring in the issue of the relative benefits to students. One must furthermore note here that the costs and benfits referred to in students' cost-benefit analyses are in present value terms (discounted by an interest rate), whereas the costs upon which tuition is based are simply current outlays by educational institutions.

Application of Concepts to Actual Tuition Levels

Having considered several theoretical bases upon which tuition can be set, how are we able to understand the existing structure of tuition rates? Which of these concepts best explains current tuition practices? An observation of existing tuition levels at public institutions reveals several patterns in tuition levels. First, these levels differ across the country, with typically higher levels found in eastern areas and lower levels in the South and West. Resident tuition and fees in 1974-75 were an average $765 in the New England area, $714 in the Middle Atlantic area, $613 in the Midwest, $484 in the Southeast, and $460 in the West (National Association of State Universities and Land Grant Colleges, 1974). These regional variations may be due to the presence or absence of private institutions of higher education, since it is difficult to believe that legislatures in eastern states are inherently less friendly to education than legislatures elsewhere, that the quality of programs at these eastern institutions is generally higher than the quality of programs elsewhere, or that operating costs differ greatly across the county.

Second, within a particular region of the country, tuition levels vary among types of institutions. Typically these levels are highest for four-year state universities with graduate schools, next highest for four-year state colleges with graduate studies in selected disciplines, and lowest (or nonexistent) at community colleges. While important exceptions do exist, this is the general pattern of tuition levels in most states. Although many observers believe that these tuition differences stem from the relative costs of operating the three types of institutions, the pattern could also be related to different elasticities of demand among the various groups of student-buyers of educational services.

The greater the elasticity of demand, the greater is the buyer response (in terms of quality purchased) following a price change. Students attending state universities have a relatively inelastic demand for higher education; they tend to reduce their expenditures on education very little as tuition is raised. Student demand at four-year state colleges is more elastic with respect to tuition increases, and students at community colleges typically have the most tuition-elastic demand for higher education. These latter may be students who are entirely self-supporting, who work part-time or more, and who may not have pursued higher education at all in the years before the advent of statewide community college systems. That is, they may be considered marginal students either in the financial or academic sense. These conclusions are in line with the evidence cited above that low-income students respond more to tuition increases than do students from higher income levels (Jackson & Weathersby, 1975).

The third observation concerning tuition levels is that they vary within any one institution. The most commonly observed variance is between graduate and undergraduate tuition levels, and some institutions have recently introduced lower and upper division tuition differentials. Some universities also give preferential treatment to selected student groups such as Vietnam veterans and senior citizens. If we extend tuition to include required laboratory fees, we also see that tuition varies among major programs of study. Students concentrating in disciplines which commonly involve lab fees, such as the sciences, are charged higher actual tuition than are other students. As in the case of the interinstitution differentials, we can say that majors in some fields of study may also have less elastic demand than majors in other areas. If we also consider that scholarships, assistantships, and other forms of financial aid reduce tuition, we see that tuition varies among students depending on their family incomes or their records of academic performance. Students with high family incomes or poor academic records are charged higher tuition than students with low family incomes or

outstanding academic records. The latter group of students has a greater elasticity of demand for education. Without financial aid they may either not pursue higher education at all, or they will choose to attend the institution which offers them the most lucrative aid package. This is particularly true of sought-after graduate students who may receive several fellowship or assistantship offers. Their demand is very elastic and they tend to choose the institution which offers the best financial aid. Thus, they are charged lower tuition than their peers who may feel fortunate to receive even an offer of admission.

Although in many of these examples of differential tuition a case can be made that it costs more to educate the university student than the community college student, or the chemistry major than the English major, these differentials existed long before cost studies were performed to determine the relative per-student expenses to the institutions. Thus, we are faced with the task of explaining these observed differences in relative tuition levels, which involves the question of the concept of tuition implicit in each of these examples. On what basis have institutions of higher education charged higher tuition of some student groups than of others? Having surveyed the various concepts and methods by which tuition can be or is now set, how can we explain these differential tuition patterns?

We can discard as inappropriate the concepts of tuition as the sales price or purchase price of educational services, either to the institution-as-firm or to the student-as-cost-benefit-analyst. Neither of these concepts is capable of explaining fully the observed tuition patterns. Implicit in the observed patterns which have evolved over the years is the concept of tuition as a sales or use tax, coupled with the notion that recognizably distinct groups exhibit different degrees of demand elasticity with respect to price (tuition). We have observed this in the interregional, interinstitutional, and intrainstitutional patterns, and remarked in passing that those groups with the greatest degree of elasticity are charged the lowest prices and vice versa. It is this characteristic of institutions of higher education that has caused at least one economist to label them as the "most blatant price discriminators in the American economy" (Becker, 1971). They are members of a monopoly industry, entry to which is controlled by the various regional accreditation associations, and their tuition policies fit the economist's model of the discriminating monopolist. There is nothing more derogatory in our saying this than in observing that theatres sell tickets on a discriminating basis, charging less of students, matineegoers, or senior citizens (whose demand to attend on a certain night of the week or at a certain time of day is relatively elastic) than of the general public (whose demand is presumably less elastic). This phenomenon can also be observed in the patterns of airline fares, public utility rates, and in other service industries throughout our economy. What is important for us to understand is the economic basis for this—the degree of buyer demand elasticity—rather than the rhetoric we are accustomed to hearing about relative tuition levels.

Having determined that institutions set tuition levels on the basis of the use-tax concept and discriminatory pricing does not necessarily mean than we can specify how institutions *should* set absolute or relative tuition levels. They will continue to follow the methods they find most politically and financially advantageous. What we as institutional researchers can do is to attempt to understand the concepts of tuition implied by these policies and to offer critical analyses of them. But by recognizing the existence of the various concepts of tuition, public institutions and statewide systems should be able to determine which concept they consider most valid and to establish long-range, fee-setting policies based upon that concept.

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FACULTY LOAD AND FACULTY ACTIVITY ANALYSIS: WHO CONSIDERS THE INDIVIDUAL FACULTY MEMBER?

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Detailed analysis of faculty workload has increased within many institutions of higher education in the past few decades. This has increased pressures upon the individual faculty member during the performance of his or her duties. Perhaps more pressures exist upon the individual faculty member today than in most any other period of higher education. Issues of enrollment decline, insecurity of tenure, student evaluations, and production ratios are but a few of the many pressures with which the individual faculty member must contend.

Objectives of higher education have not been developed to the power that all outspoken persons (publics) agree upon the function of an individual faculty member's responsibility. Legislators see faculty as teachers and approve money on that basis. State boards stress the need for comparisons between institutions regarding faculty load. Administrative academics see faculty as instructors, researchers, consultants, and public service personnel. Financial personnel see faculty duties only as described by the accounting structure. Administrators, acting within the trends of management that want professors to teach a proper load, seek comparisons between departments and schools and colleges. Students want faculty members to impart knowledge in the classroom and counsel in situations outside the classroom. Finally, the faculty member sees himself or herself as needing to be a fine instructor for students, a researcher and publisher for promotions, and a servant for the public. These differing viewpoints converge upon the faculty member and cause conflict.

Points of Conflict

Many issues in higher education, for which decisions have been made, invite conflict. Various issues (such as faculty negotions, faculty senate issues, legislative funding, and laws which attempt to regulate the minimum hours taught by individual faculty members) and their magnitude often determine the conflicts that arise.

A few of those issues are described here. Various conflicts are presented in Table 1. These are not totally exhaustive nor mutually exclusive but are presented here to illustrate that there are, indeed, those conflicts that arise.

One major conflict in the display of faculty activity analysis data is the difference between actual funding and what faculty members report by activity. Most budgeting in higher education uses the line item elements of instruction and departmental research. Faculty activity data often display the activities of instruction, research and scholarship, student-oriented services, and administrative and public services. Legislative and financial personnel often conjecture that faculty are paid and should only be paid for instruction: a conflict in objectives. (See Table 2.)

The varying perceptions regarding the amount of time to be spent on noninstructional duties has been an area of strife. Various disciplines look at faculty load differently. For example, music faculty think that their loads should not be as heavy as those in the social sciences. Perceptions are often in conflict in attempting to determine what must be accomplished for advancement, tenure and promotion. Experimental programs versus the traditional can create dissension. For example, psychology may wish to offer an experimental program instead of a lecture-type program characterized by large classes. No do bt the faculty load would then be quite different. Perceptions about quality may be an area of conflict between various groups or departments. The lower faculty workload of graduate instruction is such an example.

The loss of enrollment in many institutions has raised questions regarding faculty load. A continuous quest must be made regarding maintenance of enrollment levels and data about how these enrollments affect programs. One other controversy merits mention: the question of the unit that should be utilized in measuring faculty workload.

Some Past History Regarding the Conflict

The dilemma of assessing faculty load, and yet allowing the opportunity for faculty members to operate within a liberal academic atmosphere, still exists. During the earlier development of faculty load measurement, Stecklein (1960), writing for the American Council on Education in *How to Measure Faculty Work Load*, states, "In the opinion of the author, no attempt should be made to standardize the work load either in terms of numbers of course credits taught, or in terms of a standard number of hours in the work week" (p. 35). The dichotomy is, therefore, to have comparisons, yet not handicap the faculty.

Blackburn (1974), writing in *New Directions for Institutional Research*, presents many cases of such conflict. He states that the approach of institutional research to faculty workload must be more than a skeletal anatomy.

> The approach of institutional research in breaking down academic work into separate roles and finer and finer phases remains that of analysis, without questioning the validity of the fundamental assumptions that analyzing parts will somehow produce understanding of the whole.
>
> [His essay challenges] the anatomical approach and argues that institutional research efforts to ascertain faculty work load will continue to fail because of basic methodological and conceptual fallacies. (p. 76)

Table 1

A Few Conflicts Between Different Persons' (Publics') Perceptions of Duties of Faculty Members

A. Different perceptions of fundings sources and reporting of faculty activity analysis activities (perception of activities versus perception of funding allocation).
B. Different perceptions regarding research, publication, and public service (between funding groups and academic personnel).
C. Different perceptions of accomplishments for advancement, tenure and promotion.
D. Different perceptions (between disciplines) of faculty load.
E. Different perceptions between various organizations about offering academic programs (types of programs—experimental versus traditional).
F. Different perceptions of offering programs of intellectual quality versus allocation of funds.
G. Different perceptions of student credit hour production to hold enrollment versus development of a sound educational program.
H. Different perceptions of the measurement that should be utilized to observe faculty workload (contact hours, credit hours, full-time faculty per student, full-time ratios and so on).

In that same publication, Jedamus also implies that a different insight into changes needs to be made when he states that "an understanding of those changes and their possible significance can be enhanced through insightful analyses into their origins and development" (p. 34).

In a paper presented at the 1975 Forum of the Association for Institutional Research, Robert Simerly implied that one of the first steps in improvement of the faculty is to enunciate goals of the faculty member and explain the goals of the institution. Usually in data analysis, the goals of neither the faculty member nor the institution are considered. Differing goals of publics—legislators, administrators, and faculty members—are a real source for conflict, as well as being significant in data collection and explanation.

A seemingly endless discussion takes place, of measurement and use, concerning data to be collected. Bogue (1972) states, "Probably no other feature of faculty analysis programs generates more faculty anxiety and conflict than the question of how the data will be used" (p. 112). Measurement is indeed the most serious problem yet to be developed. Many faculty members feel that the faculty activity analysis survey does not justly reflect the manner of their productivity, and the goal of the use of such data also poses some difficulty. Often student credit hours per full-time faculty equivalent is used to measure the faculty workload; Durham (1960) and Doi (1960) imply that this is the best single measure.

Yet, Toombs (1973), has stated that perhaps this ratio emphasizes mainly the instructional endeavors and fails to look at such things as research time and administrative activities. The main point, then, that is to be made here, is that data collected for one purpose too often are utilized for making decisions which are essentially unrelated. Another such example relates to credit hours taught by a faculty member. Those faculties within areas that employ laboratory teaching methods would argue that, perhaps, the use of contact hours should be utilized. There are those who indicate that one should view student credit hours through student contact hours. Perhaps a way to summarize this conflict is to say that no one measure of productivity has been generally accepted as paramount. Secondly, we must be particularly careful not to use data in the main for other than the collection intent.

Suggestions for Reducing Pressures

The following suggestions are inferred by the authors through experience with past operations. There may be many other areas to consider, but these appear to be major at this point in time.

Communicate. Communicate with the academic areas about the function for collection and related uses of data. This communication could help relieve the great anxiety of faculty as to how such data will be utilized. Perhaps a face to face discussion should be held with main administrative personnel. Involvement at the departmental level would be a positive step.

Illustrate how data may be supportive. Illustrate to the academic community how such data can be supportive of their mission. The data might, for example, be used to plan for reduced work loads in departments with heavy loads or for increases where work loads are light.

Collect supportive data from the literature. Even though data from other sources may need to be studied with caution, comparative data allows somewhat objective evaluations in relation to what others have found.

Collect data from a comparable institution. Often it helps to collect and describe data relative to the work load of comparable institutions. Perhaps a set of ten similar institutions, selected by a set of criteria with which to compare, would be valuable. Caution should be exercised, for there are those who argue that there are no two totally comparable institutions.

Understand the academic role of faculty. Seek to understand how the academic role of personnel on your campus should function. Do not become immersed in the computer development, the detail of analysis and quantitative elements, to the point that you lose sight of the main functions of an academic institution. Students must gain a quality education. Research in proper quantities should be considered, and student and administrative duties must be performed.

Do not generalize. Care must be taken not to become so engrossed in individual data that grouped data are lost; generalizing from one or two samples violates research methodology. It is wise to collect, assess, and evaluate data over a period of time. Perhaps before real decision making occurs, at least three sets of data should be analyzed.

Involve yourself in standard setting. If at all possible, view standard setting with a very critical eye. If standards are being set, be sure to point out the pitfalls and attempt to protect the faculty against unreasonable limitations or restrictions.

Provide information. Attempt to provide faculty with results, to relate outcomes of the data. Reports

Table 2

Conflict Between Reported Activities and Funding

A. Faculty activity analysis example

Average hours spent by department "X"

Contact hours	Preparation hours	Advising hours	Administration	Research	Public service	Total hours
12.4	15.3	5.3	8.4	5.9	5.1	52.4

B. Instructional and departmental research budget

Salaries and wages				
Sam Jones	Professor	9-month	$20,676	
Bob Jones	Associate Professor	9-month	18,765	
Sue Jones	Assistant Professor	12-month	17,835	
Joe Jones	Instructor	9-month	12,577	
Irregular help			1,200	71,053
Fringe benefits (10%)			7,105	
Materials and supplies			1,250	
Telephone			700	
Postage			120	
Capital outlay			5,400	
Grand total			$85,628	

should be sent to those involved, at least to the departmental level, as well as to deans, directors, vice presidents, and presidents. Discussion and analysis by many may mean that additional planning adjustments can be made at the appropriate levels of administration.

Involve many. There should be a great deal of involvement in planning, analyses, and decision making based upon such studies. If faculty members are involved in open, logical discussions, fears and pressures are likely to be somewhat released. However, it is well to keep in mind that at times the democratic process breaks down, and a decision maker must make a judgment and proceed.

Concluding Remarks

The intent of this paper was to present conflicts between the perceptions of faculty members and the other publics (that influence higher education) regarding fund allocation and activities that faculty view as their responsibility.

Many of these conflicts represent a basic difference in the perceived objectives of higher education. In order to help reduce certain aspects of these conflicts, suggestions were given in such areas as communication, support data for the faculty, involvement in setting standards, faculty involvement in utilization of faculty load data, and understanding faculty role and activity.

The institutional researcher must be as objective as possible about use of such data and should act in the interest not only of the administration, relative to proper management, but also in the interest of the individual faculty member. Since the major goal of higher education is student learning, questions of how faculty work loads can best contribute to this goal should be sought. Elements of efficiency and effectiveness should be in balance, but if an imbalance does exist, let us hope that we have the courage to defend effectiveness.

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FACULTY REWARDS, FACULTY ACCOMPLISHMENTS, AND SEX DISCRIMINATION

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The slogan, "equal pay for equal work", has a competitor in many colleges and universities – "unequal pay for unequal effectiveness." In these insititutions, the lockstep of rigid salary schedules based on highest degree and length of service has been replaced by the concept of merit pay. In some states, legislators, reacting to the bankers' hours kept by a few faculty members, have decreed that all salary increases in state-supported institutions shall be based on merit. Such has been the state of affairs in Kansas for the past several years.

Interestingly, the merit philosophy has been employed to explain some otherwise embarrassing statistics. The absence of faculty members from minority races has commonly been explained on the basis of the shortage of qualified candidates. Similarly, differences in the distributions of rank and salary between the two sexes has occasionally been justified by their presumed difference in merit.

It was the latter circumstance which led to the investigation reported in this paper. Prior to the design of this study, officials at a number of institutions, including the state universities in Kansas, had published information showing sizeable discrepancies in the salaries paid to faculty members of the two sexes. Official and unofficial representatives of faculty women interpreted these findings to mean that discrimination on the basis of sex had occurred and requested upward adjustments in salaries for women to make them equal to those for men. Administrators who were either courageous or chauvinistic, or both, responded by saying that the merit system guarantees unequal rewards among faculty members, and that if the two sexes were treated differently, it must have been because they performed with differential effectiveness.

Alternative interpretations of this type often provide the stimulus for worthwhile applied research projects (Stewart, 1972). However, there were a number of problems which needed to be dealt with before an investigation of this particular controversy could occur:

1. Except in fields traditionally dominated by women (for example, home economics, nursing) the small number of female faculty members makes generalization for a strong study difficult.

2. Faculty rewards may assume many forms besides salary (travel opportunities, office space, secretarial help, summer employment, etc). An investigation of alleged bias would need to provide as comprehensive an assessment as possible of the reward status of male and female faculty members.

3. The merit system avows that rewards should be based on accomplishments. But, aside from routine measures like number of credit hours taught or number of publications, there has been no standard system for categorizing or measuring faculty accomplishments. There has, therefore, been no satisfactory way of examining the relationships between them and faculty rewards.

Procedure

To resolve these problems, several steps were taken:

1. The study was limited to those disciplines which have traditionally employed faculty members of both sexes. These included the social and behavioral sciences, the humanities, and education.

2. A form was devised for faculty members to record their status on each of 14 measures of reward: rate of promotion, salary, salary adjusted for experience, in-state and out-of-state travel support, tenure status, four measures of the adequacy of the faculty member's office, secretarial assistance, treatment with respect to sabbatical leaves or leaves without pay, and summer teaching opportunities.

3. The same form was used to assess numerous types of faculty accomplishment: dedication to and success in teaching (5 measures), grantsmanship (3 measures), scholarly productivity (15 measures), institutional service (4 measures), community service (5 measures), professional service (3 measures), and instructional workload (11 measures).

Sample. A listing was obtained of all faculty members who were employed in 1971 at one of the three state universities in Kansas. Asked to participate were the 271 persons who had been employed for at least six years in the following disciplines: English, speech, history, political science, economics, psychology, journalism, languages, athropology, and sociology. The six-year stipulation was necessary to assure availability of dependable records of rewards and accomplishments. A total of 212 (78 percent) completed questionnaires were returned. However, 51 of these were considered unusable, either because respondents were employed only part-time or because they spent at least half of their time in administrative duties. Of the remaining 161 who responded, only 24 were women.

Statistical analyses. Principal component analyses were undertaken to determine if the 14 reward measures and 46 accomplishment measures might be adequately represented by a fewer number of dimensions. All factors with eigenvalues greater than 1.0 were rotated by the Varimax procedure.

Factor coefficients were used to compute factor scores for each member of the sample. The plan called for using the male sample to determine the relationship between accomplishment scores and reward scores. Stepwise multiple regression analyses were performed to develop equations for predicting rewards from accomplishments.

Assuming that these analyses would yield positive

results (that is, that rewards would be shown to be a function of accomplishments for the male sample), the next step was to apply the male regression equations to female accomplishment data. This would yield estimates of the rewards which females could have expected had their accomplishments been rewarded in the same way as those for males. By subtracting predicted reward from obtained reward, a discrepancy score could be obtained. It was hypothesized that the mean discrepancy score would not differ for males and females, and this hypothesis was tested with a *t* test.

Results

Structure of rewards. Two of the reward measures (tenure status, leaves without pay) had to be excluded because they failed to differentiate among the members of the sample, of whom nearly all had tenure, hardly any had requested a leave without pay. For the remaining 12 measures, principal component analysis yielded five factors with eigenvalues greater than 1.0, accounting for 69.8 percent of the total variance. Table 1 displays the major findings from this analysis.

At least four of the five factors lend themselves to unambiguous interpretation: office quality, monetary reward, professional development assistance, and travel. The fifth, tentatively labelled "summer appointment" because of the .85 loading associated with summer teaching, is somewhat clouded by the modest loadings associated with out-of-state travel and secretarial help.

Structure of accomplishments. The 46 accomplishment measures were reduced to a total of 36 by combining certain of them. For example, reports on number of poems, short stories, novels, and magazine articles were incorporated into the measure of refereed journal articles; likewise, several measures of teaching effort were combined to yield measures called teaching level and teaching load.

Principal component analyses yielded 11 factors with eigenvalues greater than 1.0. After rotation, a straightforward interpretation of the last two factors was not possible. Rotations of 10 and 9 factors were also tried. The latter appeared to offer a solution which could be most easily interpreted. The 9 factors accounted for 57.3 percent of the variance.

Table 2 names each factor, shows the percent of variance accounted for by each, and gives the factor loadings for those items which, after rotation, loaded at least .40. The table shows that faculty activities and accomplishments were at least as diverse as they are reputed to be. The common conceptualization of faculty activity as teaching, research, and service appears overly simplistic.

Teaching appears to be represented by three different factors—teaching involvement, credentials vs. teaching load, and teaching excellence; while service is represented by four independent dimensions—community service, university service, professional leadership (state), and department leadership. Scholarly visibility and reputation as journalist show additional dimensions of faculty accomplishment.

The fact that these nine factors accounted for only 57.3 percent of the variance suggests that faculty accomplishment is a very complex domain of behavior and that the instrument used in this study was only partially successful in tapping that domain.

Table 1

Rotated Factor Loadings[a] for Reward Measures

Measure	Factor A	Factor B	Factor C	Factor D	Factor E
Sabbatical leave			.84		
Summer teaching				.85	
In-state travel					.88
Out-state travel				.49	.54
Office space	.91				
Office privacy	.84				
Office storage	.84				
Office location	.64				
Secretarial help			.70	.41	
Rate of promotion		.55			
Salary		.88			
Salary adjusted for experience		.93			
Percent variance	23.1	17.1	11.3	9.5	8.8
Suggested name	Office quality	Monetary reward	Professional development assistance	Summer appointments (?)	Travel

[a]Factor loadings below .40 have been omitted.

Table 2

Dimensions of Faculty Accomplishment[a]

I. Scholarly visibility (17.5% of variance)	
Article publication	(.72)
Book publication	(.69)
Readings editing	(.60)
Paper presentation, national	(.61)
Program participation, national	(.57)
Grant, small research	(.52)
Grant, local research	(.50)
Leadership, national professional association	(.49)
II. Community service (8.1% of variance)	
Chairmanship, community board	(.82)
Membership, community board	(.70)
Leadership, service club	(.58)
III. University service (6.4% of variance)	
Membership, Major university committee	(.75)
Membership, faculty senate	(.69)
Chairmanship, university committee	(.69)
IV. Teaching involvement (6.0% of variance)	
Discussion, teaching	(.86)
Discussion, courses	(.83)
Advice sought	(.70)
V. Journalistic reputation (4.9% of variance)	
Journalism award, national	(.75)
Journalism award, state	(.74)
Leadership, national professional association	(.42)
VI. Professional leadership, state (3.9% of variance)	
Program participation, state	(.75)
Paper presentation, state	(.70)
Leadership, state professional association	(.60)
VII. Department Leadership (3.7% of variance)	
Chairmanship, departmental committee	(.61)
Ph.D. involvement	(.56)
Teaching level	(.45)
M. A. involvement	(.42)
Membership, local government agency	(-.48)
VIII. Credentials vs. teaching load (3.5% of variance)	
Highest degree	(.68)
Teaching level	(.40)
Teaching load	(-.61)
IX. Teaching excellence (3.1% of variance)	
Teaching award	(.77)
Nomination, teaching award	(.68)

[a] Factor loadings above .40 shown in ( ).

Table 3

Single Order and Multiple Correlations
of Nine Accomplishment Measures with Five Reward Measures

Accomplishment	Office quality	Monetary reward	Professional development assistance	Summer appointment	Travel
I. Scholarly visibility	-02	47	-05	03	18
II. Community service	-02	-06	18	-16	12
III. University service	07	42	15	-09	19
IV. Teaching involvement	07	-01	-12	14	16
V. Journalistic reputation	-08	-13	-11	00	05
VI. Professional leadership, state	00	08	01	01	24
VII. Department leadership	-06	10	13	05	02
VIII. Credentials vs. teaching load	-08	20	-08	10	00
IX. Teaching excellence	02	08	18	02	-02
Multiple regression (R)	–	69	.26	–	35
Predictors	–	I,III, VIII	II,IX	–	III,IV,VI

Table 4

Discrepancy Scores for the Two Sexes on Three Measures of Reward

Rewards	Males (N=137)		Females (N=24)		
	Mean[a]	s.d.	Mean[a]	s.d.	t
Monetary	0.00	.67	-0.33	.76	2.17[b]
Professional Development Assistance	0.00	.79	-0.02	.77	0.02
Travel	0.00	.92	-0.08	.74	0.40

[a]Scores greater than 0 indicate rewards were greater than expected on the basis of accomplishments; scores less than 0 indicate rewards were less than could be expected on the basis of accomplishments.

[b]$p > .05$

Regression analyses. Factor score coefficients were computed from the principal components analyses. In addition, the standard z scores were computed for each faculty member on each of the 12 reward measures and each of the 36 accomplishment measures. By multiplying corresponding factor score coefficients and z scores, five reward factor scores and nine accomplishment factor scores were obtained for each subject. An attempt was made to predict each reward factor score from the accomplishment factor scores. Only the 137 males in the sample were used for this purpose.

Table 3 summarizes the results of the step-wise multiple regression analyses. Status on two of the reward measures, office quality and summer appointment, were unrelated to accomplishment factor scores, singly or in combination.

The other three reward factor scores could be predicted on the basis of accomplishment factor scores. However, only the monetary reward factor was predicted with reasonable accuracy, R=.69.

As Table 3 shows, the chief predictors of the monetary factor were scholarly visibility and university service; the beta weight for credentials versus teaching load was also significant. Those who received the most generous monetary rewards were the most visible scholars, the most heavily involved in universitywide governance, and to a lesser degree, those with doctoral degrees whose teaching loads were relatively light but at an advanced level.

Predictions of the factors labelled professional development assistance and travel, while statistically significant, had little explanatory potency. Those with good records of community service and of teaching excellence were especially likely to obtain sabbaticals or secretarial assistance. The best single predictor of travel was professional leadership at the state level, and although university service and teaching involvement also entered the equation, these three predictors accounted for only 11 percent of the criterion variance.

Sex comparisons. For the three reward factor scores which were related to faculty accomplishments, discrepancy scores were computed by subtracting each subject's actual reward status from status predicted on the basis of accomplishment. A simple t test was used to determine whether the mean discrepancy score for the two sexes differed by an amount greater than could be explained by chance. Table 4 summarizes these findings.

By definition, the mean discrepancy score for males was 0.00 on all criteria. For females, all three means were negative, that is, average reward scores were below predicted reward scores. However, the difference was significant only in the case of the monetary factor, where rewards averaged almost half a standard deviation below prediction.

Discussion

The study has obvious limitations both in terms of the sample and in terms of the measuring devices. It would be desirable to expand the sample to include more institutions, more disciplines, and more women. It is hoped that more refined measures of accomplishment can be devised, particularly with respect to teaching effectiveness. Existing limitations form a necessary framework for discussion:

Nature of rewards. Apparently, administrators have multiple options for rewarding faculty members; the discovery of five independent dimensions was unexpected. Since reinforcement is generally acknowledged to be a potent factor in behavior, it may be possible, by more judiciously selecting reward options, to reinforce a greater number of faculty members. In addition, it may be possible to provide more meaningful reinforcement by examining the personal values of the individual faculty member. If a desirable office has a high value for one individual, while an expense-paid convention means more to another, it may be possible to reward both without exhausting resources.

Nature of accomplishments. It was not particularly surprising to discover the complex structure of faculty accomplishment. Any casual observer of university activities is aware that faculty members are involved in many different things. The standard triumvirate, teaching, research, and service, was represented more than once. Research was reflected primarily in the scholarly visibility factor but also in journalistic reputation. Teaching was represented by three factors: involvement (interest), excellence (competence), and load (effort). Service was the most complex, being represented by four factors: community service, university service, departmental service, and professional service. The latter described state-level involvements; if professional service occurred at the national level, it was included in the scholarly visibility factor.

Payoffs. Two of the five reward factors were unrelated to any accomplishment score. To obtain some rewards, the key has not necessarily been success or merit. Travel and professional development assistance were only modestly predicted by selected accomplishments; the highest correlation (.24 between travel support and professional leadership, state) was too low to offer practical advice to a faculty member on how to merit travel funds. Only on the monetary reward factor was the payoff obvious. A faculty member interested in this type of reward would be well advised to gain scholarly visibility, provide significant university services, and seek teaching responsibilities characterized by high level and low load.

Since most administrators would agree that they

want to encourage faculty members to make contributions to research, service, and teaching, it seems desirable to use the entire reward structure to reinforce professional accomplishments.

Discrimination. The merit system appeared to exert significant control only on monetary rewards. For a given level of accomplishment, females were provided lower monetary rewards than were males. Therefore, in this reward dimension, the charge of sex discrimination appeared to be upheld.

Postscript

The study was completed in 1972. By 1973, under pressure generated by the Commission on the Status of Women, a mandatory written faculty evaluation program was established. Although criteria and procedures were set by the faculty at the departmental level, careful monitoring was done by the Affirmative Action Office and by the Vice President for Academic Affairs to insure that there was a reasonable correspondence between recommended salary increases and evaluations.

Two studies were done in 1974 to examine the impact of this change (Hoyt, 1974; Hoyt and Clegg, 1974). In the first, it was found that the salary status of female members had improved substantially from 1971 to 1974. Their salaries were increased by both a higher percentage and by a higher dollar value than was true for male faculty members. The second study showed that, although student ratings of teaching effectiveness were essentially unrelated to salary increments from 1969 through 1973, in 1974 there was a significant correlation. Apparently, the formalizing of faculty evaluation procedures served to increase the relationship between monetary reward and teaching excellence.

Thus, we have some reason to believe that a replication of the investigation reported herein might produce quite different results. And a major explanation for this could be that the original study influenced administrative decisions in such a way as to make replicated results improbable.

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FOUR-YEAR STATE COLLEGES: THE SCOPE OF COLLECTIVE BARGAINING

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In its final report, the Carnegie Commission on Higher Education predicts that "the 1970's may belong to faculty activism as the 1960's did to student activism" (1973, p. 56). Of the potential initiatives in higher education, the commission cited those originating with faculties, particularly collective bargaining, as being the more dominant ones in the decade. For state colleges facing conflicting pressures of decreased enrollments, financial exigency, and statewide demands, what attributes of the bargaining process seem to affect the scope of the written agreements?

The adoption of a written agreement between the institution and the bargaining agent, the most important aspect of the bargaining process, places "in written legal form a great deal of the substance and procedure of faculty-administrative relations heretofore either traditional or specifically delegated" (Moskow, 1971, p. 34). By committing to writing the substance and procedure of their relations, the institution and the bargaining unit broaden this relationship in scope and degree of codification (Mortimer and Lozier, 1973). The range of subjects covered by the provisions in the written agreement is broad and limited only by federal or state law (Moskow, 1971).

The purpose of this study is to examine written agreements that existed in four-year state colleges during the 1973-74 academic year in terms of their scope, or range of topics included in the agreement. Further, several research questions are raised which examine implicit assumptions held by practitioners, and stated in the literature, about factors contibuting to an extended scope. For example, one factor assumed to be influential is the particular faculty representative organization chosen. Moskow, Loewenberg, and Koziara (1970) have reported that different types of employee organizations exhibit varying degrees of interest in bargaining with public employees. Moskow (1971) has pointed to the philosophical differences of the major faculty organizations representing higher education faculties.

A second factor alleged to be of major importance is the composition of the bargaining unit. It has been argued that to include nonteaching professional support staff would dilute the bargaining unit, thereby making the faculty union less effective. Others have taken the position that many of the nonteaching professional support personnel have many of the same interests as the instructional faculty and should be included in the same bargaining unit.

A third factor that is considered consequential is the legal framework. The American industrial relations system has been greatly influenced by the statutes regulating collective bargaining. The passage of the National Labor Relations Act (NLRA) in 1935 was influential in union growth to eleven million members by 1940. In addition, the good faith bargaining provisions of Section 8(d) and Section 8(a5) have greatly expanded the scope of bargainable issues in the private sector. Although bills are pending in Congress which provide for a federal law regulating public bargaining, this regulation is presently done by state laws. These range from "meet and confer" laws that provide for extensive consultation with representatives of employee organizations, with final authority for action residing in governmental personnel, to laws providing for fact-finding (the use of an impartial third party to delineate the facts), mediation (the use of an impartial third party to assist, through interpretation and advice, in reconciling a dispute between representatives of the employer and the recognized employee organization.

A fourth factor which has drawn much comment is the use of neutral third parties to assist in negotiation impasses by acting as mediators or performing a fact-finding function. Public administrators have been critical of such procedures, feeling that third-party intervention undermines their authority in allocating funds and in maintaining costs efficiently.

A fifth factor deemed to be influential is the practice of binding arbitration. The empirical work of Slichter, Healy, and Livernash (1960) demonstrated the importance of contract administration, specifically binding arbitration, in enlarging the scope of bargaining in the private sector.

Written Agreements Analyzed

Written agreements between faculties and colleges, for all four-year state colleges who chose exclusive bargaining agents during the 1973-74 academic year, were analyzed. Only institutions defined by the United States Department of Health, Education and Welfare as four-year state colleges were included in this study.[1] In total, 14 written agreements, covering 37 state colleges throughout the country, were reviewed.[2] The names of state colleges that have chosen bargaining agents were obtained through lists available in the *Chronicle of Higher Education* and from the American Association of University Professors (AAUP), The National Education Association (NEA), and the New York State United Teachers (NYSUT). These sources were able to provide the names of colleges that have, through the election process, chosen bargaining agents as the exclusive representative of the faculties. However, to determine which state institutions actually had written agreements in effect for part or all of the 1973-74 academic year, it was necessary to write individually to every state college listed. In this way, all written agreements in effect, a total of fourteen documents, were obtained.

189

The Model Contract

Traditionally, scope of bargaining has been associated with the range of issues included in negotiations between parties to a labor agreement (Gerhart, 1969). Scope is often the focal point of controversy; frequently, college administrators look upon an expanding scope as an infringement on their rights to manage. To determine scope, unions tend to utilize so-called model contracts in presenting their demands to administrators. Moskow (1971) suggests that a model contract include the following thirteen items: the purpose and intent of the negotiations, recognition of the bargaining agent and unit, the rights and privileges of the faculty, deduction for dues, faculty work load conditions, leaves of absence, provisions for professional improvement, insurance, retirement plans, a grievance procedure, tenure provisions, professional compensation, and the duration of the agreement.

For purposes of this study, the term *scope of bargaining* was defined as the number of subjects listed above that were found in the collective bargaining agreements negotiated with the four-year state colleges. The investigators utilized *Collective Bargaining in Higher Education: Contract Content–1973* and *Higher Education Contract Clause Finder* (Goodwin and Andes, 1974; Higher Education, 1972) to assist in determining if the above items were actually in the agreements analyzed. The scope of bargaining was dichotomized into two categories: (1) low scope—having ten or less items of the thirteen possible items and (2) high scope—having eleven or more items of the thirteen possible. In this way, two forced categories emerge that conveniently group seven of the written agreements into low scope and seven into high scope for non-parametic analysis. In this study, no attempt is made to statistically create these two categories as would be possible with a larger sample of written agreements.

Research Questions

The questions examined in this study are the following:

1. Do the written agreements negotiated by the three major faculty organizations reflect significant differences in the scope of bargaining?
2. Are there significant differences in the scope of bargaining between institutions whose bargaining units only include instructional staff (those employees who regularly engage in teaching or research) and institutions whose bargaining units include professional support staff (such as professional counselors, professional librarians, and instructional resource personnel or department chairpersons) as well as the instructional staff?
3. Are there significant differences in the scope of bargaining between institutions in states with meet and confer laws and institutions in states that have laws enabling faculty to bargain collectively?
4. Are there significant differences in the scope of bargaining between institutions in states with laws providing for third-party intervention and institutions in states which do not have legal provisions for third-party intervention?
5. Are there significant differences in the scope of bargaining between institutions which have binding arbitration clauses in the written agreement and institutions with no contractual arbitration?

Findings and Implications

Many of the implications of this study are significant for relationships that were not demonstrated, rather than for data showing relationships which did exist. The finding that the particular union representing faculty members apparently did not have an effect on the scope of bargaining in four-year state colleges was probably the most surprising finding to the authors (See Table 1.) For several years, writers in the field have pointed to the many historical, structural, and philosophical differences in these organizations (Moskow, 1971). They have described the evolution in philosophy and, hence, in militancy in the NEA and AAUP in the recent past. The changes in philosophy may have been a factor in increasing membership in the NEA, but at this time, the impact on scope of bargaining has not been demonstrated. It should be noted, however, that 12 of the 14 agreements analyzed in this study were first agreements. As Mortimer and Lozier (1973) pointed out, future agreements may encompass the gains of the first agreements and seek to enlarge the scope of negotiations. The attitudes and behavior of the local affiliates or local units may be more influential in the beginning years of negotiations than the stances of the national organizations.

Findings also suggest that the composition of the bargaining unit–heterogeneous versus only instructional staff–does not affect the scope of bargaining. (See Table 1.) It was not substantiated that the inclusion of noninstructional staff in a unit might limit the number of topics in a written agreement and thereby delete the scope.

The type of state law may significantly affect the scope of bargaining in four-year state colleges. (See Table 2.) The struggles in legislatures over the type of legislation appears to be of vital importance to both unions and administrators. The demise of meet-and-confer laws, either by state action or by future federal legislation, may mean important changes in the relationships between administrators and their faculties. It is likely that a change in the scope of bargaining, reducing administrators' authority, could change the cost structure in many colleges. This could have serious consequences at a time when four-year state colleges are facing serious enrollment and fiscal pressures.

Another somewhat surprising finding was that the use of third-party intervention in state laws has not affected the scope of bargaining. (See Table 3.) Many concerns have been voiced by administrators that the use of mediation, fact-finding, and compulsory arbitration have severely limited administrators' actions in efficiently managing their institutions. However, the findings of this study suggest that the scope of bargaining is not significantly affected in states having statutes providing for such intervention.

Apparently the empirical findings of Slichter, Healy, and Livernash (1960) in the private sector, regarding the impact of grievance machinery and arbitration, cannot be applied to the public sector in four-year state colleges at this time. Statistically,

Table 1

Scope of Bargaining
by Type of Faculty Organization
and Composition of Bargaining Unit

	Scope of bargaining	
	High scope	Low scope
Type of organization[1]		
AAUP	1	0
AFT	5	2
NEA	3	3
Bargaining unit composition[2]		
Heterogeneous unit (includes more than just instructional staff)	8	4
Unit contains only instructional staff	1	1

[1] Using Kendall's tau test for grouped data an $r_c = .0615$ was obtained which is not significant at $p \leq .05$.
[2] Using Fisher's exact test, the results were not significant at $p \leq .05$.

Table 2

Types of Law Regulating Faculty Bargaining
and the Scope of Bargaining[1]

Institution	Sign	Scope of bargaining
Boston State College	+	Low
Central Michigan University	+	High
Ferris State College	+	Low
Fitchburg State College	+	Low
Lowell State College	+	High
Massachusetts College of Art	+	Low
Nebraska State College System	-	Low
New Jersey State College System	+	High
Oakland University	+	High
Pennsylvania State College and University System	+	High
Rhode Island College	+	High
Saginaw Valley College	+	High
Southeastern Massachusetts University	+	High
Worcester State College	+	Low

[1] Using the sign test, the observed r was less than the tabulated value indicating a significant relationship.

Table 3

Scope of Bargaining and
Third-Party Intervention Clauses
and Binding Arbitration Clauses

	Scope of bargaining	
	High scope	Low scope
Type of third-party intervention[1]		
No third-party intervention	0	1
Mediation and fact-finding	4	3
Compulsory arbitration	5	1
Arbitration clause[2]		
Has clause	6	3
Does not have clause	3	2

[1] Using Kendall's tau test for grouped data an $r_c = .0716$ was obtained which is not significant at $p < .05$.
[2] Using Fisher's exact test the data was not significant at $p < .05$.

the data in this study did not support the contention that the presence of binding arbitration clauses affects the scope of bargaining. As both sides become more sophisticated in the bargaining process, however, there may be a need for greater training in contract administration if both unions and administrators are to function effectively.

Perhaps the most significant finding was the overall impact that faculty unions have made on the four-year state colleges according to the model contract used in this study. Unions consider written items essential to any agreement. In only one of the contracts studied did the union fail to have less than nine of these essential items included. Thus, it appears that unions have already made an important impact upon the four-year state colleges. As the unions become more institutionalized within the colleges, these 13 essential items will undoubtedly be broadened and strengthened, adding potential restrictions on administrators.

Footnotes

[1] Zwingle and Rogers (1972) define state colleges as those institutions offering liberal arts or professional courses leading to a bachelor's degree and, in some cases, to the master's degree or beyond, but not to the doctor of philosophy or its equivalent, and which have fewer than three professional schools.

[2] The fourteen written agreements apply to single state colleges in some instances and state college systems in others. These written agreements apply to Oakland University (Michigan), Boston State College (Massachusetts), Lowell State College (Massachusetts), Massachusetts College of Art (Massachusetts), New Jersey State College System (eight institutions), Rhode Island College (Rhode Island), Southeastern Massachusetts University (Massachusetts), Worcester State College (Massachusetts), Central Michigan University (Michigan), Ferris State College (Michigan), Fitchburg State College (Massachusetts), Nebraska State College System (four institutions), Pennsylvania State College and University System (14 institutions), and Saginaw Valley College (Michigan).

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A THEORETICAL APPROACH FOR INTERNAL ALLOCATION OF ACADEMIC PERSONNEL RESOURCES

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Overview

The conflicting pressures confronting higher education institutions are immense. Institutions are confronted with static or declining budgets, a reduction in growth rate, and diverse changing program needs. At the same time, institutional administrators must determine ways to maintain strong programs and strengthen the quality of others within this environment. Quality programs are probably more closely related to adequate faculty resources than to any other factor. Although the equitable allocation of instructional faculty is a perplexing and difficult problem, procedures must be developed to ensure that faculty needs are closely matched with actual allocated faculty resources.

This project was undertaken at Florida Technological University to establish a procedure for determining discipline productivity factors (average number of student credit hours per full-time equivalent (FTE) faculty member) for the internal allocation of instructional faculty resources. An effort was made to develop a management tool for allocating faculty resources based on courses offered, purpose of course, and actual student credit hours generated. The approach is reasonably objective, easily understood, and not subject to manipulation. The specific purposes of this study follow:

1. To develop a theoretical model for the allocation of instructional faculty resources independent of discipline
2. To develop student credit hour (SCH) productivity factors by discipline
3. To contrast the number of faculty members allocated by the theoretical model and the traditional model.

Historical Development

The equitable allocation of instructional faculty resources has always been a problem for academic administrators. In 1974, Cornelis reported that a review of common allocation procedures did not provide an adequate conceptualized treatment of the matter. Although most academic planners will indicate that instructional faculty resource needs must be based on number of students and level of students, as well as purpose and pedagogical aspects of the academic unit, a review of the literature did not reveal this to be the practice. The article published in the *Chronicle of Higher Education* which addressed the budget allocation controversy between Vice Chancellor Day and Dean Silverman appears to be an ideal example of a model that did not incorporate all the essential components. Day assumed that all credit hours generated at the same level should be considered equivalent for the purpose of assessing faculty need. Silverman and others argued that Day was not taking into consideration the special nature of individual programs and disciplines. Implementation of the "modest proposal" which was recommended by Day would have resulted in the reallocation of 150 faculty positions from two divisions to three other divisions (Magarrell, 1975).

Dressel (1971) stated that the main purpose of an allocation model is to make possible the optimum use of resources according to a set of objectives. This principle must be kept in mind when developing any model or procedure for allocating instructional faculty resources. When allocating faculty resources among the various academic units, accurate estimates must be established between program offerings and desired outcomes.

A review of the common approaches used in allocating faculty resources revealed that when models are utilized, the need for positions for instruction, research, service, counseling, and administration are usually determined by different criteria and procedures. Moreover, procedures being used do not attempt to optimize the use of resources in accordance with stated objectives unless one assumes the objectives are directly reflected in the historical productivity figures. Most of the efforts used to allocate faculty resources have been based on subjective judgments of academic officers or discipline averages. Accordingly, only historical data have been used to establish these averages. The traditional models used to allocate faculty resources for direct instruction parallel one of three types: (a) an allocation based on systemwide average, (b) an allocation based on historical data at the institution, and (c) an allocation based on subjective judgment of an academic officer.

An analysis of the three procedures reveals severe limitations with each. When systemwide averages are used at the institutional level, the model is not sensitive to the unique characteristics of institutional programs nor to the specific objectives established for each program. One institution may be phasing out a weak program while a second institution may be strengthening a program in the same discipline. On the other hand, a program at one institution may offer only general education courses while the corresponding program at other institutions may only provide courses for a specialized major. When allocations are based solely on historical averages, either institutional or statewide, the model tends to repeat the mistakes of the past and perpetuate staffing inequities. This procedure is further complicated because productivity factors used over a period of time acquire a level of acceptance and permanence. These discipline productivity factors remain very static regardless of what is being taught, how it is being taught, or what is to be accomplished. The model that is based on subjective judgments of an academic

officer has the potential of being the best or worst method for allocating instructional faculty resources. Although this could be an effective, efficient approach, its effectiveness may only be realized when the academic officer has experience, intuition, and the confidence of the faculty, as well as a finely tuned crystal ball.

Regardless of the model used, a successful allocation procedure must provide a way to identify differences and similarities among disciplines. A model for statewide use must have the capacity to differentiate between substantially different programs in the same discipline throughout the system.

Model Development

In an attempt to add more objectivity and equity to the determination of discipline productivity factors for the allocation of instructional faculty resources and to avoid the difficulties and pitfalls that appear to exist with current models, an alternate approach was undertaken which utilized four basic allocation model requirements (Bolte, 1974) and involved on-campus input from each department and dean. These requirements are as follows:

1. The model must reflect institutional goals and policy decisions.
2. The model must reflect the areas of actual resource usage.
3. The model must be based on factors which are general.
4. The model must be adaptable to mathematical formulation which is easily understood by the resource user.

The study was initiated and completed during the 1974-75 school year.

The first step was to determine those factors that seemed most important in addressing instructional faculty needs. The following three factors were identified which relate directly to faculty resource need.

1. *Course instructional mode.* This factor refers to the method by which a course can be reasonably and effectively taught. Some of the common instructional modes are lecture, lecture-discussion, lecture-laboratory, laboratory, seminar, and intern supervision.
2. *Course instructional level.* This factor refers to the conventional levels of lower division, upper division, and graduate.
3. *Purpose of course.* This factor refers to whether the course is taught primarily as a general education offering or is intended for a major program of study.

In the second step, it was necessary to establish a foundation from which all parties could function. Three assumptions were made and agreed on by those involved in the project.

1. Appropriate modes of instruction could be indentified which describe the instructional methods used in courses offered at the university.
2. Average class size is dependent on mode of instruction, level of course, and purpose of course, but it is independent of the discipline in which the course is taught. For example, the astronomy and general psychology courses, offered to satisfy basic general education requirements and taught by the lecture mode of instruction, should have the same average class size even though the courses are offered by different disciplines.
3. Consensus could be reached on an average class size that would optimize the use of faculty resources while maintaining a high level of instructional quality for each mode of instruction.

The third step of the project was to develop the productivity factors. With the factors identified in Step 1 and the basic assumptions in mind, six tasks were completed to establish discipline productivity factors by level. These tasks were accomplished through a series of meetings with deans, department chairpersons, and faculty over a period of about six months and through analysis of university programs, induced course load matrices, and other student credit hour data.

1. *Established modes of instruction.* This phase involved establishing a basic list of instructional modes and then expanding the list to meet the specific needs of the university. The basic instructional mode list was circulated primarily to department chairpersons. They were asked to determine if each of their course offerings could be assigned one of the instructional modes. When a chairperson identified courses which did not fit into these modes, additional modes were added. The final list included 34 different instructional modes when purpose and level were incorporated in the scheme. Perhaps the most important outcome of identifying additional modes was that no chairperson or faculty member felt that courses were being forced into inappropriate classifications. Table 1 provides a complete list of the instructional modes by level and purpose as developed in this project.
2. *Assign instructional modes.* This phase involved assigning an appropriate mode of instruction to each course offering. Since course level was obvious, the primary task was to review the basic purpose of the course as it related to the entire university program and to select the appropriate mode of instruction to maintain consistency across the various disciplines. The only serious problem in completing this task was to identify and correct obvious inconsistencies in recommended course placement. As would be expected, some preferred to teach all of their courses in a small class mode while ignoring faculty resource limitations and alternate, effective educational delivery systems. After consultation with the deans and chairpersons, these inconsistencies were overcome. Some instructional modes were eliminated. After analyzing the stated purpose of the course with the chairperson and dean, the method of instruction could not be justified.
3. *Establish expected average class size.* Since research indicates there is no ideal class size for either student achievement or instructional delivery (Murphy, 1975), this phase required participants to use subjective judgments and experience to establish an average class size for each mode of instruction, level of course, and purpose of course. There was agreement on figures which make possible the optimum utilization of faculty resources while maintaining a high level of instructional quality. Based on wide experience with the various modes of instruction and the purpose of course offerings, a consensus was attained on an acceptable class size without anyone being heavily biased by personal references to a course within a particular area. In the final analysis, class sizes were pushed downward by a general desire to teach small classes, where a greater exchange of ideas can take place, and were pushed upward by the realization that only a limited

Table 1

Instructional Modes, Average Class Sizes, and Productivity Factors by Level and Class Purpose

Mode	Class size	Productivity factor
Lower service (general education)		
1. Lecture	90	1080
2. Lecture (discussion)	50	600
3. Lecture (discussion and problem solving)	40	480
4. Lecture (writing or speaking)	25	300
5. Lecture/lab	90/24	540
Lower major (major within department or another department)		
1. Lecture (discussion)	40	480
2. Lecture (discussion/lab)	40/20	320
3. Lecture (discussion and problem solving or activity)	32	384
4. Lecture (writing or speaking)	25	300
5. Lecture and lessons (music department only)	10	120
6. Studio	25	300
7. Lab	20	160
Upper service (general education)		
1. Lecture	60	720
2. Lecture/recitation	120/30	720
3. Lecture/lab	48/24	385
4. Lecture/studio	48/24	385
5. Lecture (writing and speaking)	25	300
6. Lecture (case method)	32	384
7. Lecture/student activity	48/24	385
8. Music performance	50	400
Upper major (major within department or another department)		
1. Lecture (discussion)	34	408
2. Lecture (discussion and problem solving)	28	336
3. Lecture (discussion and problem solving/lab)	28/14	224
4. Lecture (discussion and student presentation or activity)	34	408
5. Lecture (discussion and field projects)	30	360
6. Lecture (discussion/lab)	34/17	272
7. Lecture (discussion/student activity)	34/17	312
8. Lecture (writing or speaking)	25	300
9. Lecture (case method)	28	336
10. Lab and clinical	15	120
11. Studio	20	240
12. Seminar	20	240
13. Lecture and lessons (music department only)	10	120
14. Supervision	20	240

number of faculty positions would be available.

4. *Establish SCH productivity factors.* An SCH productivity factor was established for each mode of instruction, level of course, and purpose of course directly from the expected class size. Since a full-time instructional faculty member in the State University System of Florida would normally teach approximately 12 credit hours, the product of 12 times the average class size yields an expected productivity factor for most modes of instruction. Weightings were applied for modes of instruction such as laboratories, where contract hours greatly exceed the number of course credit hours. However, the weightings were purposefully limited to not more than one and one-half equivalent credit hours for each assigned laboratory credit hour. Table 1, column 3, provides a complete list of these figures.

5. *Calculate the required faculty* The required number of faculty that would have been needed to teach the courses that were offered during the previous two

years was computed for each discipline and level as if all courses had been taught in the assigned instruction mode. These figures were obtained by dividing the credit hours generated in each course by the prescribed productivity factors (Table 1, column 3). Data for the 2-year period were utilized to assure that all courses typically taught at the university would be included and to assure reasonable stability in average productivity factors from one year to the next.

6. *Calculate average productivity factors.* The number of SCH per FTE faculty was determined for each discipline and level. This step was accomplished by dividing the aggregate number of SCH generated by level and discipline for the previous two years by the aggregate number of required faculty (determined in task 5). The quotients represent the weighted productivity factors for each discipline level. Once student credit hour projections become available for the following year, these productivity factors can be used to estimate instructional faculty needs. This procedure assumes a similar mix among course offerings from year to year. An analysis was completed of productivity factors for the 1972-74 and 1973-75 periods. A chi-square analysis at the 5 percent level of significance did not reveal that productivity factors were dependent on year. Therefore, it can be assumed that a high degree of stability can be anticipated with the procedure. Table 2 provides an illustration of the procedure used to determine a discipline productivity factor. Calculations for all discipline productivity factors were made by using the course-offered inventory, data base, and a COBOL program.

It is important to note that, although this procedure utilizes historical data, the procedure in no way perpetuates previous inequities or arbitrary choices made by the department chairperson or dean. The procedure uses historical SCH data only to establish the mix of SCH among various instructional modes which a given discipline has generated and is likely to generate during the next succeeding year. Changes in mix will be reflected in subsequent year productivity factors, but the changes will invariably be small. By using data for the two previous years, the complete impact of a change in course mix will be realized by the second recalculation.

A particularly important and clear advantage of the procedure is that it permits faculty, department chairpersons, and deans to readily identify one of the reasons for varying productivity factors across the disciplines in the university.

Comparative Analysis

An analysis of the productivity factors and number of positions generated by the model was undertaken to assess the impact of the model on each discipline and on the total faculty allocation. A comparison between the previous and the model-generated productivity factors was completed to determine if differences could be justified. Also, a comparison was completed for each discipline between the number of faculty allocated according to the previous productivity factors and the projected number of faculty needed when the model-generated productivity factors were used.

Table 3 provides a listing of the productivity factors that were generated by using the previous and model generated factors. These factors were utilized to drive the university faculty resource allocation model. A chi-square analysis was used to test the null hypothesis of independence for both the lower and upper levels. Both null hypotheses were rejected at the 5 percent level of significance. Thus, one can conclude that the number of students per FTE faculty is dependent on the procedure for determining the productivity factor.

An analysis of the expected and new productivity factors at each level revealed a lack of homogeneity in the direction of change indicating that a redistribution of faculty should occur. For example, in the engineering discipline, over 30 percent of the SCH were generated at the upper level in courses used only to satisfy advance general education requirements. These courses were

Table 2

Sample Calculation of a Discipline Productivity Factor

Course	Mode	Productivity level	Student credit hours generated			Faculty required
			1973-74	1974-75	Total	
COM 100	LS01	1080	978	1476	2454	2.270
SPE 101	LS04	300	3195	3252	6447	21.490
SPE 102	LM07	160	109	28	137	.856
SPE 261	LM02	320	120	275	395	1.234
SPE 262	LM01	480	32	0	32	.067
Discipline	N/A	Total	N/A	N/A	9465	25.917

$$\text{Productivity factor} = \frac{\text{Total SCH}}{\text{Total faculty required}} = \frac{9465}{25.917} = 365.2 = 365$$

NOTE: The computer program and documentation may be obtained by contacting J. R. Bolte or D. R. Coleman.

Table 3

Previous and Model-Generated
Instructional Productivity Factors
by Discipline and Level

Discipline	Lower level		Upper level	
	Previous	Model generated	Previous	Model generated
Biology	400	365	250	296
Business Administration	425	439	390	400
Communication	350	365	325	314
Composition	425	421	340	336
Education	400	438	390	[illegible]
Engineering	340	514	325	384
Fine arts	200	201	200	228
Foreign language	375	300	340	323
Health science	300	480	200	275
Letters	380	502	380	367
Mathematics	475	415	340	335
Physical science	375	435	250	298
Psychology	525	748	400	363
Social science	525	873	400	380

similar to other courses assigned to the upper level service lecture mode of instruction. These findings indicate that the productivity factor profiles are significantly different. However, the need to reallocate faculty to meet the instructional needs was justifiable in each instance.

Table 4 provides a distribution of the number of faculty generated by using the previous and model-generated factors. A chi-square analysis was used to test the null hypothesis of independence. These data did not reveal sufficient evidence to reject the null hyopthesis at the 5 percent level of significance. Although there were minor differences in the number of faculty allocated by the two sets of factors, most changes proved to be minimal, and the combined impact on any one discipline or college was not serious. To minimize the impact of adopting the new productivity factors, it was agreed that no productivity factor would be adjusted more than 10 percent.

Conclusion

The equitable allocation of resources and the ability to withstand scrutiny by those adversely affected are the ultimate tests of a resource allocation model. If the model is to have credibility and be accepted as a useful management tool, faculty and college administrators must be convinced that it will treat each department equitably.

The findings of this project indicate that it is possible to assess need on thebasis of how courses should be taught to provide quality instruction. Our experience indicates that faculty and administrators are willing to address the realities of budget limitations and adopt reasonable class size standards for each instructional mode. Although complete agreement was not attained, the procedure and the instructional productivity factors were accepted by the chairpersons and deans.

This procedure enables college personnel to determine why there are differences among the various discipline productivity factors. One additional advantage is that it enables board members or legislators to review a university's procedure for assessing instructional faculty needs in terms they can associate with their background and experience. The number of students per class and the number of classes taught per week are

Table 4

Number of Generated Faculty Using
Previous and Model-generated Factors

Discipline	Number of faculty	
	Previous	Model generated
Biology	16.2	15.6
Business administration	50.7	49.7
Communication	20.7	20.8
Composition	10.7	10.8
Education	64.9	69.1
Engineering	37.1	31.4
Fine arts	21.6	20.0
Foreign langauges	4.4	5.2
Health science	8.2	6.6
Letters	32.0	29.2
Mathematics	21.3	22.6
Physical science	17.9	15.3
Psychology	18.6	18.0
Social science	35.2	33.1
Total	359.2	347.4

much more meaningful than a derived SCH figure.

As a result of this research, the authors believe a management tool for accessing instructional faculty resource needs has been developed. This procedure is reasonably objective, easily understood, considers important factors, and considers optimum use of faculty resources. Furthermore, the procedure is not munipulatable over a given period of time. The authors believe the procedure provides an equitable, objective method for assessing faculty needs and that it is readily adaptable to other institutions regardless of size.

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IMPROVING INSTITUTIONAL ACCOUNTABILITY THROUGH FACULTY DEVELOPMENT: REACTING TO CONFLICTING PRESSURES IN POSTSECONDARY EDUCATION

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Three out of every ten people in the United States are directly involved in education, which has become our nation's largest enterprise. Even though there is evidence to suggest that enrollments in higher education are beginning to stabilize, according to the *Digest of Educational Statistics* (1974), we have 8.5 million students enrolled in degree-credit programs in higher education. This is the largest enrollment at any time in our history. These 8.5 million students attend 2,792 colleges or universities in the United States. Currently, 620,000 faculty members teach in these institutions (p. 136). Thus, higher education has its fair share of our nation's largest enterprise.

The Creation of Conflicting Pressures

Since World War II, higher education has expanded at an unprecedented rate in the race to educate our youth and to provide continuing education opportunities for adults. Now that our enrollment appears to have stabilized at the same time that we are experiencing diminishing financial resources, we are beginning to examine who pays for education and what we are getting for our expenditures. At private institutions, students bear 65.3 percent of the costs of their education while 34.7 percent of the cost comes from other sources. However, at state supported institutions, students contribute only 22.1 percent with 77.9 percent coming from other sources (p. 112).

We are now facing the conflicting pressures, in postsecondary education, to provide quality education at the lowest possible cost in an age of tight financial resources when faculty are demanding salary increases and students and taxpayers are raising the issue of consumer rights and accountability.

The Pressure of Being Equalitarian

In addition, we have moved toward an equalitarian view of American higher education, no longer considering it to be the privilege of the few. Thus, our image of colleges and universities is changing. Where formerly we tended to view our institutions simply as a community of scholars, we are now beginning to recognize that higher education is a big business that employs scholars to produce many of its products and services. And, as we have begun to convert to this big business view of education, we have experienced many of the conflicting pressures experienced by business. We have demands for accountability and reactions to accountability procedures. We have faculty members who, following the big business model, have unionized. Our growing pains are loud, and they are painful. The conflicting pressures in postsecondary education have never been greater in the entire history of humankind.

The Role of the Institutional Researcher

One way for institutional researchers to play major roles in assisting their institutions to react more effectively to conflicting pressures is by creating reliable data bases regarding the myths and the realities of conflicting pressures within those institutions.

The Publish or Perish Pressure

One of the major professional pressures identified by faculty members is the polarization connected with the approach to teaching and research that results in the publish or perish dilemma. However, an examination of the actual research that has been done, taken from research and publication records of faculty members in higher education, shows that the publish or perish controversy is largely a myth. The fact is that most faculty members engage in little or no research or publishing. This has been noted by Cartter (1966) and Mayhew (1971). In fact, Mayhew charges that the faculty "steep themselves in the stale intellectual brew first mixed when they themselves were in college" (p. 496).

One of the best reviews of the research-based literature on the publish or perish controversy was done by Lewis (1975). This review also confirms that the majority of faculty members in higher education engage in little or no research or publishing. Blackburn (1975) has found evidence to show that time in rank seems to be the only important factor in determining promotion.

In analyzing the publish or perish myth, it is interesting to note that practically no one has made an attempt to find out what conditions are necessary for the development of a publishing scholar. Simerly (1973) found that faculty felt that inadequate available time hindered their overall growth and development. This perception of inadequate available time may be a major psychological block to faculty growth and development, particularly in light of Blackburn's (1974, p. 77) review of the research on faculty work loads which shows that most faculty members work between 55 and 60 hours per week.

Blau (1973, p. 111) found that, among faculty members who do engage in research and publishing, the faculty member's own graduate training did little to promote this research-publishing orientation. He found that, although the size of an institution affects a faculty member's research output, it does so only indirectly. Large institutions tend to produce more faculty members who actually engage in research and publishing. However, Blau found that large size must also be combined with affluence that allows institutions to recruit research-producing faculty. The climate produced by having superior research-producing colleagues seems to be the major factor in facilitating the production of publishing scholars among the entire faculty (p. 239).

Yet the publish-perish myth persists because of the incongruence between real and perceived reward structures of institutions. Most faculty members perceive that research and publishing, rather than teaching, constitute the major reward systems even in highly diverse institutions (Gaff and Wilson, 1971; Wilson, Gaff, Dienst, Wood and Bavry, 1975).

It is interesting to note that this incongruency in perceptions between real and perceived reward systems also carries over into other aspects of faculty members' perceptions of their world. The Blackburn (1975) study involving administrator, colleague, student, and self-ratings shows that professors also have erroneous perceptions of how others perceive and assess them. Faculty members consistently give themselves higher ratings on overall teaching effectiveness than do students or peers.

The Faculty Work World

Another way in which institutional researchers can help their institutions deal more effectively with conflicting pressures is to find better ways to conceptualize and report on the work that faculty members do.

The traditional way to deal with faculty work is in terms of teaching, research, and service. The traditional expectations associated with this taxonomy are that faculty members should excel in all of these areas. However, this taxonomy and its resultant expectations developed at a time when change was not so rapid and faculty members did not have so many conflicting demands placed on their time.

In an effort to more accurately study and classify what faculty members actually do and what portion of their time is devoted to various components of their work, Stecklein (1974, p. 11) reports that the National Center for Higher Education Management Systems (NCHEMS) in connection with the Western Interstate Commission on Higher Education (WICHE) developed the following classification for faculty work:

1. Teaching
2. Research, scholarship, and creative work
3. Internal service
4. Public service

This taxonomy represents an improvement over the traditional one in that it expands the research dimension to consider creative work by faculty members who can best demonstrate their contributions to the intellectual community in this manner. In addition, it recognizes the difference between internal institutional service that may benefit the institution directly and the more broad area of public service that may benefit the institution only in indirect ways. This taxonomy is used most often to describe faculty work in quantitative ways, such as percent of time spent in each described area of activity.

However, because of increased public demands for accountability, it is also necessary to develop ways to evaluate the quality of a faculty member's contribution. For this an even more comprehensive taxonomy, such as the one suggested by Miller (1974, p. 16), is appropriate. His categories of faculty activity are as follows:

1. Classroom teaching
2. Advising
3. Faculty service and relations
4. Management (administration)
5. Performing and visual arts
6. Professional services
7. Publications
8. Public service
9. Research

This taxonomy lends itself well to the following institutional uses:

1. Faculty self-reports of work loads
2. Quantitative and qualitative evaluations of faculty performance in each of the categories
3. Individual, departmental, college, and institutional management-by-objectives systems
4. Long-range planning activities

The Faculty Development Movement

As institutions begin to consider long-range planning, they try to find better ways to plan for the more effective use of physical, financial, and human resources. For years, we have given attention to planning for the utilization of physical and financial resources; however, it is only recently that higher education has turned its attention to finding more effective ways to plan for the utilization of the human resources of its faculty. Such planning has become known as faculty development, and within the last four years, between 400 and 500 faculty development programs have developed in the United States. However, an analysis of these programs shows that there is no clear agreement about what faculty development programs should be doing.

One of the problems in discussing faculty development is that we are just now beginning to be able to conceptualize faculty development in meaningful ways that consider the complex interaction of person, profession, organization, and consumer (Eble (1971; 1973) was one of the first to note that we have made few attempts to conceptualize adequately the development process of faculty. As a result, institutions tend to consider faculty development in elementary ways that are related only to things that are basic to the operation of the institution. The most comprehensive and successful recent attempts to conceptualize faculty development have been done by Gaff (1975) and Bergquist and Phillips (1975).

To date, many activities and ideas have been classified as attempts at faculty development. The following taxonomy provides a useful way to categorize these major approaches to faculty development.

Faculty Development as Individual Freedom—the Lassez-Faire Approach

"My approach to helping faculty members develop," remarked one dean recently, "is to hire self-actualizing people, turn them loose, and leave them alone. They know what they're supposed to do. The tenure-promotion review then separates the good ones from the bad." This is the lassez-faire, hands-off, management approach typical of people who see faculty members simply as being a part of a community of scholars.

The assumption behind this approach is that somehow this community of scholars will actively work to define goals that are acceptable to an institution and the multiple publics that it serves. However, as Gross and Grambsch (1974) show in one of the most comprehensive studies that has been done on institutional goals, the goals of the faculty generally are concerned primarily with preserving the status quo. Faculty members do not take into account the wide variety of concerns

being voiced by the multiple publics that institutions must serve in an age of increased emphasis on accountability and consumerism. The five top-rated institutional goals as perceived by the faculty in the Gross and Crambsch study follow:

1. Protect academic freedom
2. Ensure confidence of contributors
3. Maintain top quality in important programs
4. Increase or maintain prestige
5. Train students for scholarship/research

The authors interpret these ranked goals to mean that "the major universities of the United States emphasize support goals over output goals, especially the protection of academic freedom and other goals related to the pursuit of personal faculty careers" (p. 51). Major concern for students, especially undergraduates, comes near the bottom of the list of 47 goals (p. 197).

Faculty Development as Introduction and Initiation

Hollenback (1964), Hibbard (1966), and England (1967) have documented faculty development efforts that are concerned with orientation activities involved in bringing someone new into the organization. Faculty development as introduction and initiation operates at the formal level of official orientation sessions and at the informal level described by Case (1971) in which faculty members, new to an organization, sniff out the procedures, practices, and accepted norms that guide behavior.

Faculty Development as Career Development

Gustad (1959), Eble (1971), and Schein (1971) are among those who have studied faculty development from the viewpoint of social psychology in which the faculty member is seen as proceeding along a career path. This method is typically concerned with such things as tenure-promotion procedures, boundaries among assistant, associate, and full professors, and rites of passage through these boundaries.

Faculty Development as Curriculum Reform

The fact that most faculty members know little about the teaching-learning process and about educational technology strategies designed to facilitate the teaching-learning process has been noted by Powell (1970), Milton (1973), and Bergquist and Phillips (1975). Asking faculty members to focus on restructuring curriculum is an organizational method designed to facilitate change in a system. The implication is that, in order to change the curriculum, faculty members themselves must examine and change things they are doing.

Typical of this approach is that utilized by the Center for Instructional Development staffed by Bob Diamond and his associates at Syracuse University (1975). This office works closely with academic departments in helping them to design effective technologies for improving the instructional process. Increasingly, there is good evidence to suggest that this is one of the best entry points for faculty development activities because it is possible to deal concretely in the area in which faculty members have expertise—subject matter. This provides a psychological support system that begins with confirmation of expertise rather than with negative implications that faculty members themselves need to change. Such things as attitudes and values of faculty members, organizational reward systems, interpersonal skills, and organizational conflict management may or may not be dealt with when utilizing this approach.

Faculty Development as Concept and Construct

This is an attempt to conceptualize faculty development in relation to Argyris' (1964) concept about the need to integrate the individual and the organization so that the goals and objectives of both can be met. This move toward a concept and construct of faculty development is a sophisticated attempt to incorporate all of the previous approaches to faculty development in a generalizing and synthesizing way.

Thus, *concept*, to follow Kerlinger's definition (1973, p. 28), becomes an expression of an abstraction that is formed by generalizing from particulars. As Owens (1970, p. 42) notes, the ideas in a concept don't necessarily have to prove themselves. Rather, they are simply what Griffiths describes as terms to which we attach a particular meaning (1959, p. 38). Thus, a concept of faculty development evolves from generalizing and synthesizing ways in which we have previously considered faculty development.

A step beyond a concept is a *construct*. A construct is also a concept; however, it has an additional meaning that is consciously and deliberately attached to the word for a particular scientific purpose. A major test of a construct, according to Kerlinger (p. 29), is that it enters into and relates to theoretical schemes. Thus, a construct of faculty development takes into account and relates to a wide variety of theories in the behavioral sciences regarding such things as human motivation, organizational theory, systems theory, and adult life stages.

Within this concept and construct of faculty development, the individual faculty member can be considered in relation to the following three major dimensions:

1. Personal
2. Professional
3. Organizational

None of these is mutually exclusive. Each is equally important, and attention is deliberately given to all of these dimensions simultaneously. In addition, both structural and process components of faculty development are considered. Component parts of these structural and process considerations are shown in figure 1.

It is at the level of developing concepts and constructs that the institutional researcher can assume a major role in faculty development efforts. The institutional researcher is the logical person to be called on to create a reliable data base for decision making regarding the most effective use of the human resource of the faculty. Thus, through creation of this data base about the personal, professional, and organizational dimensions of faculty members, the institutional researcher can make a major impact. With accurate data about the component parts of both structural and process dimensions that lead to the formulation of a concept and construct of faculty development, the institutional researcher can exercise power on the organizational elites who turn to him or her for guidance in decision making. Romaine (1971) described this approach to institutional research as that of being at the nerve center

	Conceptual Components	
Dimensions of faculty development	Structural	Process
Personal	Adult life stages	Human motivation Individual growth Change Adaptability Attitudes
Professional	Career path	Tenure-promotion Socialization to role Local-cosmopolitan reward orientations Mobility within profession
Organizational	College and university environment	Organizational mobility Adaptive techniques Real and perceived reward systems Organizational conflict management Curriculum reform

Figure 1. Components of a construct of faculty development.

of the institution.

Faculty Development as Organizational Metagoal

This is even a step beyond faculty development as concept and construct. This approach moves to the overriding organizational commitment to a metagoal, or generalized overriding goal, that is institutionalized to the point of being abstracted to a process. Thus, an organizational metagoal suggested by Bennis (1967) might be to develop a system for constantly detecting new goals. Lippitt (1969) describes this process as organizational renewal. Hefferlin (1969) builds on this and states that a main goal for institutions of higher education should be to develop the capacity to provide for continuous adaptability.

Faculty development as organizational metagoal can be thought of as creating a reliable organizational data base in order to give conscious attention to planning, studying, and improving those structures and processes used by faculty to attain their goals as well as the goals of the organization. It represents a conscious organizational commitment to the complex process of deliberately planning for the most effective use of the human resource of the faculty.

Summary of the Institutional Researcher's Role

This, then, is the challenge to the institutional researcher: to create reliable data bases about the institution's faculty members and thus to influence the power elites within the institution to develop a construct of faculty development as a metagoal for the institution. This is action-oriented institutional research that makes a difference.

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AN ANALYSIS OF PHILOSOPHIES CONCERNING FACULTY PROMOTION AND RELATED IMPLICATIONS FOR THE INSTITUTION

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The intended purpose of faculty promotion policies and the implications of professorial rank distributions have been debated by educational administrators and faculty since the beginning of the professorial rank system. Although the distribution of faculty among the various ranks per se at an institution may not be a significant concern, the antecedents and consequences of a professorial rank distribution are important. For example, it may be difficult to maintain a competitive salary scale if the proportion of faculty in the upper ranks is excessive. In addition, promotion criteria and policies may directly affect faculty creative output and thereby affect the achievement of institutional goals.

The conflicting pressures related to maintaining a competitive salary scale, fostering faculty morale through the opportunity for regular advancement, and using the promotion procedure to enhance the achievement of institutional goals must be carefully analyzed when developing an institutional promotion plan. Although most administrators have considered the tenure procedure the key process for assessing and controlling long-range institutional salary commitment, the promotion procedure may play an even more important role in the future, especially if enrollment growth and funding are curtailed. Moreover, the promotion plan can provide a process for modifying behavior to foster the realization of institutional goals. When the criteria for promotion are compatible with the goals of the institution and delineated in a specific plan, it is likely that faculty output will increase, faculty morale will be enhanced, and outstanding faculty will be retained.

This study was undertaken during a period of change from a state of rapid growth, in both personnel and funding, to a state of almost no growth in personnel or funding, in order to develop a promotional plan that would foster attainment of institutional goals. In the absence of fast institutional growth, it becomes difficult to provide for faculty advancement, maintain acceptable faculty rank distributions and salary differentials, and encourage faculty output.

It was assumed in initiating this study that the faculty and administration would want to use the promotion process to optimize faculty output in the form of quality instruction, creative accomplishments, and service and that it is desirable to reward meritorious performance, retain outstanding faculty, maintain a competitive salary scale, and reduce faculty anxiety. The specific purposes of this paper are the following:

1. To determine the budget implications associated with different rank distributions
2. To compare professorial rank profiles of selected institutions
3. To delineate several broad promotion philosophies
4. To delineate alternative promotion plans derived from these basic philosophies
5. To delineate the advantages and disadvantages of each alternative plan.

Historical Prospective

A review of the current literature revealed only limited research on the topic of promotion. Most investigators agree that the basic concerns associated with controlled promotion planning include ideal rank mix, relative weightings for research and teaching, procedures for assessing quality teaching and research, and maintenance of a desirable salary schedule (Furniss, 1971; Greene, 1971; Meany and Ruetz, 1972; Seastone, 1971). There was no consensus on how to set parameters and achieve desired results.

Research leading to the development of mathematical models for attaining and maintaining a desirable rank mix has been undertaken by several investigators. Rowe's model on optimal faculty staffing serves as an example of this procedure (1970). Although the mathematical model serves as a management tool for identifying critical decisions, the use of a model that does not address the nonquantifiable factors related to promotion is difficult, if not impossible, to justify.

Although a specified mix and salary spread may be desirable, these factors are difficult to attain and maintain in a steady state environment. Furniss stated that either a high rate of turnover must occur or the institution must be willing to adopt a freeze on promotion in order to achieve a desired mix of faculty rank and salary spread (1971). Another option for achieving this goal is to set stringent requirements as the norm for performance. This will require university faculty and administrators to adopt the concept that some faculty members may remain assistant or associate professors for their entire career. The problem of rank salary overlap can be reduced if realistic maximum salaries are established for each rank (Seastone, 1971). Rank maximums would have to be set by discipline and adjusted when the overall salary base of the institution changed.

Research on tenure normally does not address the promotion issue, but the concerns and components of the system are similar. Although research on tenure may not relate directly to promotion, it provides additional insight on the promotion issue. Furniss pointed out that, although administrators appear to have nearly unlimited freedom in filling vacancies and deciding who receives appointments, the growing movement toward collective negotiations and the protective behavior of tenured faculty members in recommending junior colleagues

make this freedom mostly illusory (1971).

Another factor that could have a devastating impact on rank distributions and salary differentials in the United States is the Equal Pay Act and other legislation involving affirmative action (Furniss, 1973). It is often difficult to justify paying one professor who is teaching a basic English composition course more than another instructor who teaches the same course. If institutions are forced to justify the difference between these assignments, procedures for delineating all segments of an assignment will have to be developed for assessing equitable workloads. If this cannot be accomplished, the entire structure of professorial rank as a means of providing a desirable salary differential may become obsolete.

Implications of Rank Distribution on Rank Salary Differentials

Before delving directly into promotion philosophies, it is instructive to examine theoretically the impact of rank distribution on rank salary averages. Relatively straightforward calculations can be made under assumptions consistent with the intent and purpose of this study. It was assumed that funding or other limitations and constraints had placed the educational institution in a condition of no growth in terms of the number of faculty and that salary adjustments would be limited, at best, to cost-of-living increases. It was further assumed that faculty mobility would be severely limited due to supply and demand considerations and faculty turnover would be minimal. Under the latter assumption, the most competent and valuable faculty members are the only ones who have mobility, and the necessity for utilizing promotion policies and procedures which will retain outstanding faculty is increased.

To see the impact on faculty salary averages at each rank, it is only necessary to assume an average salary (usually set by external factors such as state funding levels or endowment) and to adopt an acceptable spread in average salary between ranks. Assume the overall salary average to be A dollars per faculty member, the total number of faculty members to be N, and the fractional number of faculty members at each rank to be f_1, f_2, f_3, and f_4 for the instructor, assistant professor, associate professor, and professor ranks, respectively. If the difference in average salary between ranks is given by D_1 for the instructor and assistant professor ranks, D_2 for the assistant and associate professor ranks, and D_3 for the associate professor and professor ranks, and if X is arbitrarily assumed to be the average salary at the associate professor level, then the following relationship is valid:

$$\frac{f_1 N (X-D_1-D_2) + f_2 N(X-D_2) + f_3 N(X) + f_4 N(X+D_3)}{N} = A$$

Simplification of the above expression with the recognition that $f_1+f_2+f_3+f_4 = 1$ yields the following equation for X, the average salary at the associate professor level:

$$X = A-f_1(D_1+D_2)+f_2(D_2)-f_4(D_3).$$

Using the equations and definitions given, the average associate professor salary can be calculated. The calculation of the average salary for other ranks can be determined simply by adding or subtracting the appropriate rank salary differences.

Tables 1 and 2 show the results of calculations as described above for typical average salary and rank salary difference parameters. A three-rank distribution is shown because the instructor rank has had limited use in recent years.

Although differences in the average salary at each rank are not unexpected, the full impact of varying rank distributions on the average salaries is striking. The fact that salaries of full professors could vary from approximately $18,000 to over $24,000, depending on internal rank distribution, must be considered significant from the view of retaining those faculty members who should be the best qualified and experienced in their fields. It is clear that under conditions of a fixed, all ranks salary average and limited or no growth, the failure to maintain a reasonable rank distribution over a period of years could have a drastic effect on the ability of the institution to remain competitive and retain the best faculty members.

Further review of Tables 1 and 2 leads to another disturbing fact for troubled administrators. Under the assumed steady state conditions, it would appear that the effect of giving any promotions and increasing the percentage of faculty in the upper ranks is to reduce salaries in other ranks. The only alternatives are to secure increased salary funding through reduction in support funding (cost-of-living raises do not help), or to have turnover primarily in the upper ranks. During the 1950-70 period, the problem failed to surface because rapid institutional growth and faculty turnover provided a steady source of new funds and opportunities for internal rank and salary distribution adjustments. However, in the past five years the number of faculty positions and funding have been static in many institutions and the effect is being felt dramatically by both faculty and administrators who have become accustomed to liberal promotion policies and salary advancements. In such times of stress, and after every source of funds has been reexamined, a hard look at promotion philosophies takes on a sense of urgency.

One of the alternatives to the dilemma described above should be examined in more detail. In times of financial stress, and minimum or no growth, it is realistic to assume some turnover of faculty. If turnover occurs through loss of high-ranking faculty and replacement by low-ranking faculty, a part of the financial problem of giving suitable salary increases will be resolved. One implication of this process, however, is that the institution may be losing the very best faculty members. A more likely turnover process is the loss of faculty across all ranks with limited replacement of faculty in the lower ranks. Since the university will desire to select the best candidates and will invariably need new faculty in high-demand areas, new appointments are likely to be at higher-than-average salaries. The impact of these factors should result, over time, in a narrowing of the rank salary differentials. A review of AAUP salary and rank data for Type IIA institutions in the 1973-74 academic year was completed to determine if the narrowing effect could be detected. It was hypothesized that the relative salary spread for institutions having a small fraction of full and associate professors would be greater than the salary spread for those having a large fraction in the upper two ranks. This hypothesis

Table 1

Effect of Rank Distribution on Salary Averages
4 - Rank Distribution
($16,000 Salary Average, $3,000 Difference
Between the Instructor, Assistant Professor and Associate Professor Ranks,
$6,000 Difference Between the Associate Professor and Professor Ranks)

Distribution percentage				Average salary			
Instr	Asst prof	Assoc prof	Prof	Instr	Asst prof	Assoc prof	Prof
40	20	30	10	12,400	15,400	18,400	24,400
40	20	20	20	11,800	14,800	17,800	23,800
40	20	10	30	11,200	14,200	17,200	23,200
30	30	30	10	12,100	15,100	18,100	24,100
30	30	20	20	11,500	14,500	17,500	23,500
30	30	10	30	10,900	13,900	16,900	22,900
20	40	30	10	11,800	14,800	17,800	23,800
20	40	20	20	11,200	14,200	17,200	23,200
20	40	10	30	10,600	13,600	16,600	22,600
30	20	40	10	11,800	14,300	17,800	23,800
30	20	30	20	11,200	14,200	17,200	23,200
30	20	20	30	10,600	13,600	16,600	22,600
30	20	10	40	10,000	13,000	16,000	22,000
20	30	40	10	11,500	14,500	17,500	23,500
20	30	30	20	10,900	13,900	16,900	22,900
20	30	20	30	10,300	13,300	16,300	22,300
20	30	10	40	9,700	12,700	15,700	21,700
30	10	40	20	10,900	13,900	16,900	22,900
30	10	30	30	10,300	13,300	16,300	22,300
30	10	20	40	9,700	12,700	15,700	21,700
20	20	40	20	10,600	13,600	16,600	22,600
20	20	30	30	10,000	13,000	16,000	22,000
20	20	20	40	9,400	12,400	15,400	21,400
10	30	40	20	10,300	13,300	16,300	22,300
10	30	30	30	9,700	12,700	15,700	21,700
10	30	20	40	9,100	12,100	15,100	21,100
20	10	50	20	10,300	13,300	16,300	22,300
20	10	40	30	9,700	12,700	15,700	21,700
20	10	30	40	9,100	12,100	15,100	21,100
20	10	20	50	8,500	11,500	14,500	20,500
10	20	50	20	10,000	13,000	16,000	22,000
10	20	40	30	9,400	12,400	15,400	21,400
10	20	30	40	8,800	11,800	14,800	20,800
10	20	20	50	8,200	11,200	14,200	20,200

Table 2

Effect of Rank Distribution on Salary Averages
3-Rank Distribution
($16,000 Salary Average, $3,000 Difference
Between Assistant and Associate Professor Ranks
$6,000 Difference Between Associate and Full Professor Ranks)

Distribution percentage			Average salary		
Asst prof	Assoc prof	Prof	Asst prof	Assoc prof	Prof
70	30	0	15,100	18,100	24,100
70	20	10	14,500	17,500	23,500
70	10	20	13,900	16,900	22,900
70	0	30	13,300	16,300	22,300
60	40	0	14,800	17,800	23,800
60	30	10	14,200	17,200	23,200
60	20	20	13,600	16,600	22,600
60	10	30	13,000	16,000	22,000
60	0	40	12,400	15,400	21,400
50	50	0	14,500	17,500	23,500
50	40	10	13,900	16,900	22,900
50	30	20	13,300	16,300	22,300
50	20	30	12,700	15,700	21,700
50	10	40	12,100	15,100	21,100
50	0	50	11,500	14,500	20,500
40	60	0	14,200	17,200	23,200
40	50	10	13,600	16,600	22,600
40	40	20	13,000	16,000	22,000
40	30	30	12,400	15,400	21,400
40	20	40	11,800	14,800	20,800
40	10	50	11,200	14,200	20,200
40	0	60	10,600	13,600	19,600
30	70	0	13,900	16,900	22,900
30	60	10	13,300	16,300	22,300
30	50	20	12,700	15,700	21,700
30	40	30	12,100	15,100	21,100
30	30	40	11,500	14,500	20,500
30	20	50	10,900	13,900	19,900
30	10	60	10,300	13,300	19,300
30	0	70	9,700	12,700	18,700
20	80	0	13,300	16,600	22,600
20	70	10	13,000	16,000	22,000
20	60	20	12,400	15,400	21,400
20	50	30	11,800	14,800	20,800
20	40	40	11,200	14,200	20,200
20	30	50	10,600	13,600	19,600
20	20	60	10,000	13,000	19,000
20	10	70	9,400	12,400	18,400
20	0	80	8,800	11,800	17,800

was tested by comparing the ratio of the combined average institutional salary for full and associate professors with the combined average salary for the assistant professors and instructors. The statistical analysis of the average ratios for those institutions which had less than 40 percent full and associate professors and those which had greater than 60 percent full and associate professors was completed by using the difference of means for small samples at the five percent level of significance.

Table 3 provides a summary of the average salary ratios for the selected intervals. These data do not provide sufficient evidence to reject the null hypothesis at the five percent level of significance.

Although the data for the 1973-74 year did not evidence a significant relative salary differential between those institutions with a low or high proportion of faculty in the upper two ranks, the effect may be anticipated if severe economic restrictions continue and

Table 3

Summary of Average Salary Ratios[a] by Ratio Interval for IIA Institutions[b]

Ratio interval	N	Average ratio
Institutions with <.40 full and associate professors	29	X=1.35
Institutions with >.60 full and associate professors	30	X=1.39

[a]The ratio X was defined as:

$$X = \frac{\text{Average combined institutional salary for professors and associate professors}}{\text{Average combined institutional salary for assistant professors and instructors}}$$

[b]Source: *The annual report on the economic status of the profession, 1973-74.* American Association of University Professors.

liberal promotion policies are allowed to remain in effect. Since salary spread shift is a long-range phenomena and institutions may have received differential funding in past years following shifts to a higher percentage of faculty in the upper ranks, one should not assume that the issue is insignificant.

Promotion Philosophies

There are undoubtedly many promotion philosophies that can be described. However, when various philosophies are examined for basic characteristics, three identifiable philosophies emerge.

1. *Lock-step promotion:* The lock-step promotion philosophy implies that, after a prescribed number of years in each rank and with "acceptable" performance, a faculty member is promoted to the next academic rank. This philosophy is usually opposed by both faculty and administrators when viewed in a philosophical context, but in practice the method is commonly used. It is, of course, a substitute for tough decision making, and it eliminates the need for establishing promotion criteria other than time in rank.

In times of rapid faculty growth and high faculty mobility, the lock-step promotion system causes few internal problems. A desirable rank distribution and salary differential among the ranks can easily be maintained during a period of rapid growth by hiring predominantly in the lower ranks. However, in times of a steady-state university environment, the lock-step system limits rank salary differentials and, unless the time span between each promotion step is long, one must be willing to accept a high percentage of faculty in the upper ranks. In fact, if one assumes (a) that the working years of an average faculty member with the doctorate are between the ages of 29 and 65 (36 years), (b) that only three ranks are in use, and (c) that each rank should be equally populated, the typical time span between promotions would be 12 years. Even if four ranks are uniformly used, the typical time span in each rank would be nine years. In light of the many years of rapid university growth (throughout the 1950-1970 period) and relatively lenient promotion policies, these time spans seem unusually long.

In addition to the difficulty that can be anticipated in maintaining optimal salary ranges and rank distributions under steady-state conditions, a lock-step system does little to encourage faculty productivity. Because promotions are awarded primarily on the basis of time in rank, this system provides no incentive for output beyond the minimum required. Furthermore, it may be difficult to retain the most competent faculty members because their contributions are not recognized differentially.

2. *Merit promotion:* A merit promotion system assumes that promotion is a reward for outstanding past performance by a faculty member. Each promotion is awarded on the basis of demonstrated accomplishments since the initial appointment or last promotion, whichever is most recent. Promotion systems based on merit are presently being commonly used in institutions of higher learning and, in terms of basic philosophy, appear to be the most acceptable to both faculty and administrators. In theory, merit-based promotion plans encourage a much higher level of faculty productivity than do lock-step promotion procedures. Furthermore, faculty output can be channeled into those areas which are of greatest importance in achieving the goals of the institution. For example, universities emphasizing the mission of teaching and public service can encourage these activities by making promotion contingent upon excellence in teaching and service. Universities which emphasize research can similarly develop promotion criteria consistent with this purpose. In addition to encouraging faculty productivity, retention of the most competent faculty is likely to be enhanced under a merit system. Rewards are given to highly qualified faculty, and, thus, these individuals should be more satisified.

Certain problems may occur in the implementation and use of a merit promotion system. When merit is judged against subjective criteria, there is a danger that the promotion system may become too lax. Unless there is good reason to believe that a university has been particularly fortunate in attracting all "outstanding" faculty, a rapid shift of faculty members to the upper ranks is indicative that the system in not discriminative. As mentioned previously, this shift in rank distribution under no-growth conditions can be disastrous in terms of effects on salary differentials and ultimately on the success of the institution in holding outstanding faculty. Another problem in merit promotion systems is that the awarding of promotion purely on the basis of past accomplishments may result in decreased productivity on the part of faculty members who have reached the highest rank. This result would negate one of the primary advantages of a merit system by decreasing total faculty productivity. Finally, a merit promotion system requires a large investment of time on the part of administrators and faculty members who serve on review committees. Difficulty decisions must be made, and the unpleasant consequences of some of those decisions must be faced.

3. *Merit promotion with reassessment:* The reassessment of faculty members as part of a merit promotion system is used sparingly. However, the concept is not

automatically rejected either by faculty members or administrators, and unproductive individuals in the upper ranks seem to be readily identifiable on any university campus. Under a merit system which includes reassessment, faculty members are reviewed not only for the purpose of awarding promotion but also to determine retention of rank after promotion. For example, after a predetermined number of years in a given rank, even if no further promotion is warranted (or possible, as in the case of full professors), each faculty member's performance over this period is evaluated to determine if he or she should be maintained at the current rank and salary. This system reduces the likelihood that faculty members will cease to be productive after having been promoted to an upper rank. Obviously, productivity is both encouraged and maintained over time in such a system, and greater promotional opportunities are made available to deserving junior faculty members while still maintaining a competitive salary structure.

The primary unique problems with implementing reassessment are the potential anxiety and turmoil among faculty members resulting from this rather threatening and novel procedure, as well as the increased administrative and faculty time required by yet another review procedure.

Alternative Promotion Plans

The relative advantages and disadvantages of the three basic promotion philosophies have been discussed. However, from each of the three, a number of discrete promotion plans can be derived. They are presented in Figure 1. It will be noted that consideration of rank quotas has been given to each of the basic plans presented. The inconsistency of combining quotas with either a lock-step or merit promotion system is fully recognized, but, since quotas are in use in some institutions, systems including them are discussed. Even under a quota system, it is necessary to utilize some procedure to determine who will be promoted when upper rank vacancies occur. Since the use of quotas is inconsistent with both lock-step and merit promotion plans, any discrete plan that involves quotas is referred to as quasi lock-step or quasi merit. The ten promotion plans represent ten combinations of the variables under consideration. However, it will become apparent that some combinations are simply not viable alternatives.

1. *Lock-step:* Under this plan, definite time-in-rank requirements for promotion are adopted. Promotion is then awarded to each faculty member who demonstrates at least minimum competency and who has served the required amount of time. Clearly, faculty productivity is not likely to be enhanced by this procedure since rewards for excellence are not provided. Also, in the steady-state university, competitive salary differentials cannot be maintained unless time-in-rank requirements are exceedingly long. It would appear, then, that the most talented faculty would be lost to other institutions that reward excellence.

2. *Quasi lock-step/quotas:* In order to maintain desired salary ranges, quotas on the percentage of faculty permitted in each rank are established. Although salary differentials can thus be imposed artificially, neither productivity nor retention of compentent faculty is encouraged. In particular, junior faculty who are productive will be forced to await promotion until space is available, and they are likely to be lost to other institutions.

3. *Merit/nonspecific criteria:* Nonspecific criteria are defined here as relatively vague, general statements as the basis for evaluation. For example, promotion is said to be based upon evaluation of a faculty member's teaching, research, and service. However, the evidence for teaching competencies, the quantity and quality of research, and the amount and types of service activities required for an "outstanding" rating are not precisely defined. Nonspecific criteria are probably those most frequently used for evaluating faculty members for promotion. It is usually assumed that exact criteria are impossible to define, and, therefore, a faculty member's colleagues and immediate superiors are best able to make the required subjective judgments. Theoretically, this system should encourage faculty productivity, encourage retention of qualified individuals, and result in the maintenance of a competitive salary structure. However, it is argued that, if no attention is given to rank distribution (i.e., no quotas), this system is likely to fail under steady-state conditions. For the system to succeed, hard decisions must be made and the temptation to be lenient must be overcome.

4. *Quasi merit/nonspecific criteria/quotas:* This plan may become necessary if a majority of faculty are being promoted after meeting minimum time-in-rank requirements and if there is no reason to believe that the institution has an extremely large percentage of unusually talented faculty members. When quotas are enforced, evaluations will necessarily become more stringent because it will be recognized that promotion cannot be awarded to everyone. Faculty productivity will be enhanced since competition will be keen. Desired salary ranges can be maintained by the enforcement of quotas. Highly competent faculty should be retained unless quotas are established when an institution is already "top heavy." In this case, some highly competent junior faculty will leave because they will perceive their chances for promotion as being small.

5. *Merit/specific criteria:* When specific criteria are used, it is assumed that the duties of university faculty members can be defined and that it is possible to develop a procedure for quantifying a faculty member's contributions so that comparisons can be made. This system encourages a high level of faculty productivity, and faculty members know precisely what is expected of them. Because different activities can be weighted in terms of compatibility with the goals of the institution, faculty behavior may be efficiently modified to encourage desired outcomes. If the criteria are set high enough, the desired rank distribution and resulting salary ranges can be maintained. Highly competent faculty should be encouraged to remain in this setting because their output is directly rewarded.

6. *Quasi merit/specific criteria/quotas:* This plan will not be necessary if specific criteria are developed adequately. If the upper ranks are growing too rapidly under Plan 5, then quotas could be adopted to solve the problem. However, a combination of quotas and specific criteria has no advantage over the quasi merit/nonspecific criteria/quotas plan. Since specific criteria are time-consuming to develop, it serves no useful purpose to implement them if they are inadequate and quotas become necessary. Thus, this procedure is judged to be untenable.

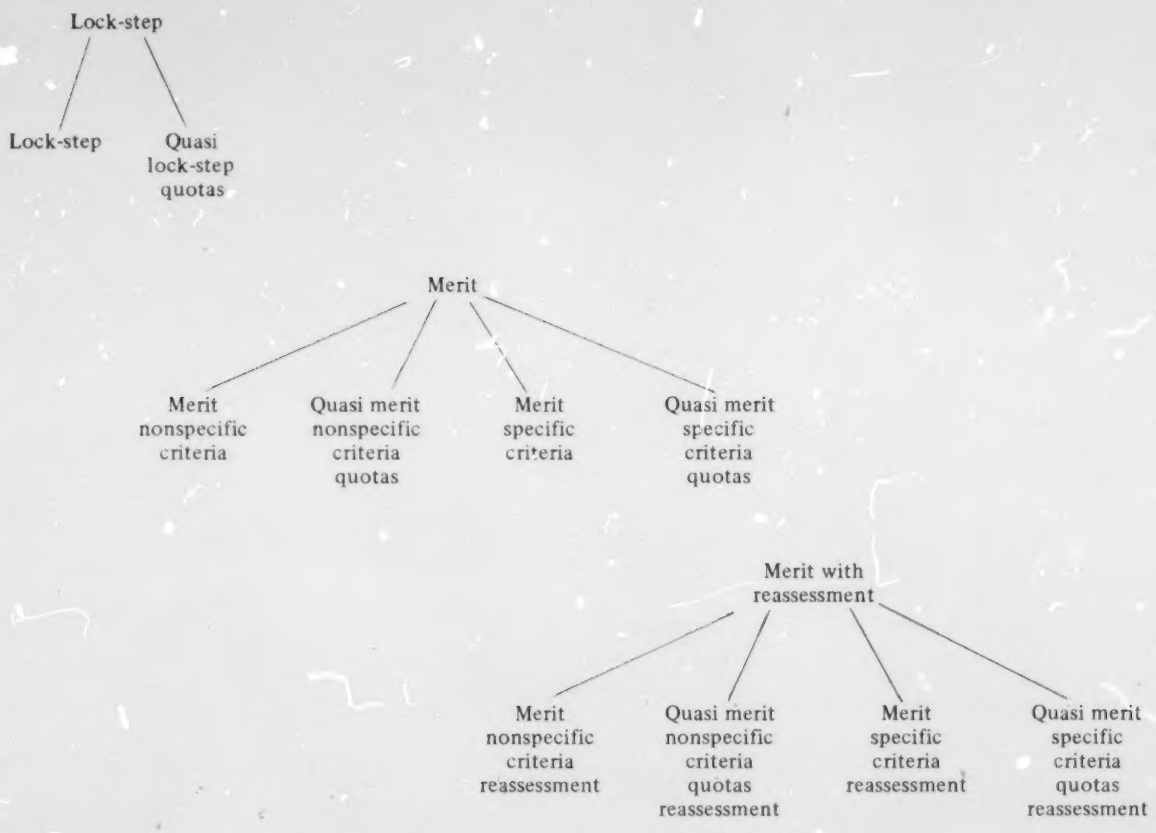

Figure 1. Alternative promotion plans.

The remaining plans are similar to the last four discussed except that regular assessment is conducted to determine whether or not current rank should be retained. The unique advantage of reassessment is that productivity is directly encouraged and rewarded over the faculty member's entire career. Rank is not maintained purely on the basis of past merit. It is not clear that reassessment will increase the likelihood of success of the merit/nonspecific criteria plan. The danger of excessive leniency may be even greater in carrying out reassessments. Therefore the predicted outcomes with the addition of reassessment may be unchanged.

If a university employs a merit-based promotion system with specific criteria designed to be sufficiently stringent to prevent average faculty members from entering the upper ranks, it is unlikely that the addition of reassessment will provide a measurable improvement. It would guard against decreasing productivity of faculty members who attain the highest rank, but, since reassessment is costly in terms of administrative and faculty time, the gains from demoting a few faculty members are probably not large.

As indicated earlier, the quasi merit/specific criteria/quotas plan is regarded as untenable, and the addition of reassessment does not change the basic problems of this plan.

Conclusions

The trend toward limited or no growth in the number of faculty positions and resources in the nation's universities will have a significant impact on faculty promotion philosophies and processes if continued for an extended period of time. University administrators must adopt promotion philosophies which permit reasonable rank distributions and salary differentials, while simultaneously providing promotion and salary advancement opportunities to those faculty members who are considered outstanding in their ability to enhance the university's goals and aspirations. A university environment must be created in which the level of anxiety is low for the faculty member who is judged average, using established norms. The overall philosophy must foster acceptance of the view that some faculty may remain at a rank below the full professor level for their entire career and that these faculty are important and valuable members of the university community. Under conditions

of fixed salary funding, the distribution of faculty among the various professorial ranks will have a significant impact on salary levels in each rank and will affect the institution's success in attracting and holding outstanding, productive faculty members. The theoretical study of salary levels shows that under realistic salary differences between ranks, average rank salaries can vary by as much as $4000 for acceptable variations in the rank distribution of faculty.

Promotion philosophies may be categorized as lockstep, merit, and merit with reassessment. Each category has relative advantages and disadvantages and each, under proper conditions, can be used during periods of limited or no university growth. However, it is clear that a merit system with either specific or nonspecific criteria must be developed if universities are to enhance the quality of the faculty, reward productive faculty, and achieve established university goals. Nonspecific criteria probably must be combined with quotas to be useful, while specific criteria, if properly developed, can stand alone. While reassessment is a costly and threatening procedure, it should foster sustained productivity by all faculty in meeting university goals. The expectation that universities face several years of limited growth and funding strongly suggests that administrators must take a serious look at existing promotion practices.

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CORRELATES OF STUDENT SATISFACTION OUTCOMES: A STATEWIDE PERSPECTIVE

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College Going and Employability

Who needs college? This is the question posed on the cover of an April 1976 issue of *Newsweek*. That feature article, like a number of recent articles in the popular press, is filled with case studies of honor graduates from pretigious schools who are either unemployed or underemployed. While such stories do not fairly represent the employment picture for graduates by degree level, field of study, or by geographic region, they are sufficient to raise questions in the minds of the public.

In reviewing budget requests for higher education last year, members of the Tennessee legislature indicated an interest in the employment record of graduates. After being exposed to illustrations of Phi Beta Kappa graduates subsisting on food stamps and Ph.D.'s working as welders and waitresses, members of state legislatures have found it easy to question the need for higher education. The state agency has no systematic data base on graduates and, therefore, has little foundation from which to deal with this question.

This concern is by no means limited to the public press. Recent issues in the literature of higher education have also devoted attention to this problem. Articles in the *Chronicle of Higher Education* entitled "Valuing an Education: Is the Old Yardstick Obsolete—Economic Advantages of Degree Seen Fading" (March 31, 1975) and "Seniors Outlook Grim: Jobs are even Scarcer than Last Year" (March 22, 1976) typify professionals' concern with this problem. Major illustrations of this concern can also be found in *Change*: "The Reserve Army of the Underemployed" (May, 1975); "Is College Necessary" (February, 1975); and "The Declining Value of College Going" (September, 1975).

Contrasting this viewpoint is the perspective of Harold Howe II. Howe (1975) observed that when, in the lives of students, the most widely known and accepted indicator of college value is found in future incomes, our colleges and universities may have lost much of their claim to being educational. His theme reminds us that the collegiate experience contributes not just to our economic vitality but to our personal and civic enrichment as well. For example, the personal outcomes of college may include such personal diversions as tennis, 19th century literature, musical moments, engine mechanics, and metal sculpture—activities lacking dollar outcomes but not value outcomes in our lives.

Writing in the *Saturday Review*, Fred Hechinger observed that in higher education's expansive years:

> Posters in buses and subways gave prospective students precise estimates of hard cash that would come their way. . . . It is hardly surprising that such simplistic definition of education's value invited an equally simplistic reaction: when the dollar value of education declined in a shaken job market, education itself took a nose dive in the public's esteem. (1976, p. 12)

Hechinger later explores our future focus:

> Without projecting a compelling, forward looking agenda, education's leaders cannot hope to arouse the American people from the self-centered preoccupation with their own economic troubles. The public will not help to rescue the schools and colleges unless these institutions spell out once again what they can do for the American people. (p. 19)

This leads directly to the question of effectiveness. If we find a preoccupation with economic outcomes to be offensive or inappropriate, then we had better bring some public visibility to a more comprehensive array of educational goals.

The development of indicators for educational effectiveness leads to another reason for the Tennessee Higher Education Commission's survey of graduates. In addition to responding to increased public interest in the relationship of a college education to employability, our statewide survey of recent college graduates was prompted by an interest in student satisfaction as an outcome measure of educational effectiveness.

Student Satisfaction as an Outcome Measure

The Tennessee Higher Education Commission has a project underway to explore the feasibility of allocating some portion of state funds on a performance criterion, as compared to the current allocation method based on the number of student credit hours by level and field of study. The project is designed to build complementary features into the current allocation method that might promote institutional diversity and the assessment of instructional effectiveness. Current project activities are designed to examine the feasibility of developing instructional performance indicators at each public institution in Tennessee, indicators that might reflect institutional identity and provide some evidence, however imperfect, of instructional effectiveness. For assessing institutional performance and instructional effectiveness, one of the more promising sources of data available to colleges and universities is that provided by graduates. Postgraduation activity of graduates and their evaluative responses can be important indicators of the outcomes of the college experience.

Most professionals in higher education are familiar with the current emphasis on its outputs. This emphasis flows from a recognition that past measures of higher

education effectiveness are largely input- and process-dominated. Such measures as student-faculty ratio, percentage of faculty with doctorate, the E & G expenditure per FTE student may be valid indicators of the quality of educational environment. But they do not give us much direct knowledge about the development of our students–intellectual, social, personal, and aesthetic.

The National Center for Higher Education Management Systems (NCHEMS) at The Western Interstate Commission for Higher Education (WICHE) has pioneered in the study of the outputs of higher education. Its publications dealing with the question of outcomes reveal an intent to use student surveys as a means of obtaining selected outcome data. A survey instrument is already being field tested by NCHEMS, Student Outcomes Questionnaire for Program Completers. One of the key questions associated with the use of graduate feedback is the extent to which the pattern of responses might vary as a function of selected academic and socioeconomic variables.

For example, if we ask graduates to express satisfaction with college experience, would such expression show a pattern that would vary with the graduate's academic performance, field of study, race or age? If we are to use graduate feedback as an outcome indicator, knowledge of such relationships will be important.

One of the important contributions of our survey, in addition to tracking graduate career paths, was the opportunity it provided for exploring the relationship between student satisfaction and a number of academic and socioeconomic variables. Before taking a look at these relationships, though, a few comments about our survey are in order.

Survey Description

Institutional follow-up studies on graduates are not uncommon, but statewide efforts are rare. A survey of other states indicated that only one other state had conducted a comprehensive survey of graduates on either a one-time or recurring basis.

The initiative for a statewide survey came from the Tennessee Higher Education Commission, the state coordinating agency for higher education. The study was planned and executed in cooperation with governing boards and institutions. Assisting in the planning of the survey were Dr. Sid Micek, director of the Higher Education Outcomes Project at NCHEMS, and Dr. James Maxey, director of the American College Testing Program (ACT) Research Services. In addition to these two consultants, a team of three doctoral students in higher education administration were involved in the planning and execution of the survey. Each doctoral student developed a dissertation topic related to the survey.

The state-level purposes of the survey were:

1. To provide information on career tracks and postcollege activity at various degree levels.
2. To develop instruments and information systems procedures that would facilitate the acquisition and analysis of graduate follow-up on a recurring basis.

The survey involved a representative sampling of 7,800 from the 1973-74 graduates of Tennessee public colleges and universities. The sample involved graduates from all institutions, programs, and degree levels. An original mailing of questionnaires in June 1975 and a follow-up mailing in October resulted in responses from 4,154 graduates, or more than 53 percent of the sample. This percentage does not reflect approximately 600 questionnaires returned as undeliverable.

This paper is specifically concerned with bachelor's degree recipients. Included in the statewide sample were 4,183 recipients of the bachelor's degree, representing one-third of those graduates from all institutions during the 1973-74 year. A stratified random sample was selected to insure proper representation by major field and institution. Responses were received from 2,192, producing a response rate of 52.4 percent.

The research instrument used was a 28-item, self-mailing questionnaire. Most of these items were self-coding, and there were two "critical incident" type items to elicit open-ended, evaluative responses from respondents.

Results of this study provide data that focus on (a) characteristics of graduates–academic and socioeconomic –, (b) career tracks and employment or educational activity, and (c) student satisfaction and evaluation. For the purpose of this paper, we are concerned only with the last of these.

A Set of Expectations

Graduates' expressions of satisfaction with college experience can be an important indicator of institutional performance. If graduate satisfaction is to be used as an outcome measure, however, it is important to know how satisfaction may vary with selected academic and socioeconomic variables. Responses from our statewide survey permitted an evaluation of this question by exploring the following set of expectations.

Expectation 1: There will be a significant positive relationship between age of graduate and expressed level of satisfaction.

Expectation 2: There will be a significant positive relationship between reported number of hours worked per week and expressed level of satisfaction.

Expectation 3: There will be a significant positive relationship between reported grade point average and expressed level of satisfaction.

Expectation 4: There will be a significant positve relationship between extent of extracurricular involvement and expressed satisfaction.

Expectation 5: Graduates whose major source of financial support was other than their parents will express a significantly higher level of satisfaction than those receiving major support from parents.

Expectation 6: Black graduates will express a significantly higher level of satisfaction than Caucasian graduates.

Expectation 7: Students graduating in the social sciences will express a significantly lower level of satisfaction than those graduating in the sciences and professions.

Tests of significance for these expectations were performed by chi-square analysis. As Table 1 indicates, a chi-square analysis of the data for Expectation 1 indicates no significant relation between age and satisfaction. Likewise, a calculated X^2 of 4.53 indicates no relation between the number of hours worked per week and satisfaction. In examining Expectation 3, a calculated X^2 of 4.29 indicates no significant relation between a graduate's grade point average and satisfaction.

A chi-square analysis confirms Expectation 4. There

Table 1

A Calculated X^2 of Expressed Graduate Satisfaction and Selected Academic and Socioeconomic Variables

Variable	X^2	df	N
1. Age	4.23	2	2,099
2. Hours worked	4.53	2	2,072
3. Grade point average	4.29	3	2,093
4. Extracurricular involvement	15.19*	2	2,097
5. Parental support	1.06	2	1,884
6. Race	0.50	1	2,055
7. Area of study	1.15	1	1,380

*Significant at the .001 level.

is a significant positive relationship between extent of extracurricular involvement and expressed level of satisfaction. As Table 1 indicates, a calculated X^2 of 15.19 shows a strong positive relation between extracurricular involvement and satisfaction at the .001 level of significance.

A test of significance for Expectation 5 produced a X^2 of 1.06 indicating no significant relationship between the level of parental support and satisfaction. Expectation 6 proved to be false as well. A calculated X^2 of 0.50 indicates no relation between race and satisfaction. A chi-square analysis of Expectation 7 found no relation at any acceptable level of significance between the satisfaction of social science graduates and those graduating in the sciences and professions. As Table 1 summarizes, a calculated X^2 of each variable with expressed satisfaction indicates only one significant relationship. That extensive extracurricular involvement has a positive effect on graduate satisfaction comes as no surprise. It is most revealing, however, to find no other socioeconomic or academic variables having a significant impact on the expressed level of graduate satisfaction.

Implication

The implication of this analysis is that graduate satisfaction can be used as an indicator of institutional performance without concern for significant variance in expression of satisfaction due to specific socioeconomic or academic variables (age, hours worked, grade point average, parental support, race, and area of study). One of the possible objections to using graduate satisfaction has been the conjecture that the level of graduate satisfaction would vary significantly with those variables. Hopefully, our findings will promote the use of graduate feedback as an important indicator in assessing the outcomes of higher education.

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THE ASSESSMENT OF STUDENT AND FACULTY EDUCATIONAL ORIENTATIONS: A RESEARCH STRATEGY FOR CONFLICT ASSESSMENT

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The abundant research which has investigated college student characteristics has usually focused on student background variables, general personality characteristics, perceptions of the college environment, and cognitive and affective development during college. As a result, much discussion has centered on the relative fit of students within programs or institutions. Many researchers have interpreted their data as suggesting that students who are incongruent in various ways with the institutional ethos and values are more likely to be dissatisfied, more likely to leave the institution or less likely to profit from their educational experience (Pace, 1966; Pervin, 1967, 1968; Stern, 1970). An entire current national project to supply better information for prospective college students is based on the assumption that, with better information, students will better be able to choose institutions and programs which are congruent with their needs and interests.

Most commonly, research on student satisfaction and student-institution fit has examined the congruence of the student's personality or background variables with the total institutional environment or aspects of that environment (Richardson, 1970; Nafziger, Holland, and Gottfredson, 1975). When the research has been more specifically focused, usually the peer group has been considered the main influence determining student satisfaction. Except as a byproduct of the many attempts to develop instruments which might measure teaching effectiveness, there has been little systematic examination of student orientations toward the purpose of their education, toward the process of education in the classroom, and toward the relationship between faculty and students in determining the nature of the academic endeavor. Even less common is the comparison of the educational views of students and faculty. In part, this comparison has not been made because accurate information on faculty educational attitudes is difficult to obtain. Despite the pioneering work of Gamson (1966), only recently has a new line of research begun to shed light on faculty views toward the educational process. The most notable example is the study by Wilson, Joff, Dienst, Wood, and Bavry (1975) of faculty, self-reported behaviors in six diverse institutions.

Yet, as postsecondary institutions face the challenge of maintaining institutional vitality in the uncertain economic times ahead, the question of student-institution fit assumes even greater importance. The question is most often phrased in terms of attracting and retaining students. At other times, it is discussed as a concern for dealing with the educational needs of increasingly heterogeneous student bodies. Moreover, as students' consumer rights in education are further clarified, it may be that students will become more vocal about the nature and quality of their educational experiences.

Conflicts between the two main sets of actors on the educational scene, faculty and students, surfaced dramatically during the late sixties. Although the conflict has now been institutionalized on most campuses through the inclusion of students in governance bodies, basic philosophical differences still exist and appear in debates over even minor educational policies. One substantial difference of opinion which has received wide national attention is the debate over career-oriented versus liberal education.

Recognition of where the parties stand is the first step toward resolution of conflict. Thus, it is critical that institutions gain a better view of the educational orientations of the key participants in the educational enterprise. While we would hardly expect students and faculty to have identical attitudes on most educational issues, it is valuable to know how different these attitudes are and on what dimensions differences occur. Furthermore, it is important to determine if relationships exist between these differences and the satisfaction and withdrawal patterns of students. The next critical step, then, is to utilize such information, where possible to do so without sacrificing the mission of the institution, in adapting institutional policies so that such policies are more responsive to students' views. Jonathan Warren has phrased the problem most succinctly:

> If the predilections of faculty members and of groups of students can be matched reasonably well, diversity even in a small program can be vitalizing. And when disparate purpose or approaches do not seem capable of a satisfactory accommodation, making these disparities known can head off much frustration. (1973, p. 38)

Warren suggested that entering students might be presented with a questionnaire describing a number of instructional options and be asked to indicate their preferences. Such information, he felt, was needed both for effective program planning and for subsequent evaluation.

Recent pilot studies conducted by the authors have used a similar approach and have demonstrated that congruence (or incongruence in some situations) of student and faculty educational orientations is often associated with student satisfaction, with student attrition and early transfer from a college, as well as with evaluation

217

of courses and instructors.

These investigations have employed two recently developed survey inventories, the Student Orientations Survey (Morstain, 1973a) and its counterpart, the Faculty Orientations Survey (Morstain and Smart, 1976). The inventories assess attitudes about the purposes of a college education, preferences for different modes of learning, and views on student and faculty roles in decision making related to the instructional process. The advantage of these surveys is that they query faculty and students directly about their educational preferences rather than using the high inference measures such as personality inventories or collections of background characteristics. There is, of course, no clear assurance that people behave the way they say they will in a paper and pencil survey. That determination is a next step in the progress of this type of research.

The Student Orientations Survey (SOS) is an attitudinal instrument containing eighty questions to be answered on a 4-point Likert-type scale. Answers range from "strongly disagree" to "strongly agree." Factor analysis of the student instrument has shown that the items cluster into ten attitudinal scales ranging in internal reliability from .70 to .88 (coefficient alpha). Six of the 10 attitudinal scales have been utilized in comparing student views with the 48 parallel items on the Faculty Orientations Survey (FOS). There are three general orientation dimensions, and each dimension is assessed by the two 8-item scales. (See Figure 1.)

Given the pattern of scale intercorrelations, three scales cluster together in what has been interpreted as a general preparatory orientation to college, while three other scales are related to a general exploratory orientation to college. That is, it appears that while college is most highly valued by some for its preparatory function—in terms of acquiring useful knowledge, skills, vocations, and social roles—it is valued most highly by others for its exploratory possibilities—that is, for the opportunities it affords for exploring one's interests, ideas, and personal identity.

Brief scale descriptions follow:

Achievement (Ach): taps a practical, goal-oriented outlook regarding the purpose of education, a view which gauges various aspects of the college experience in terms of their future usefulness

Assignment learning (AL): relates to a preference for structured teaching-learning arrangements which emphasize formal courses with specific, clear-cut assignments

Assessment (As): relates to student-faculty power relationships that emphasize the importance of formal evaluations by faculty of student work; grades are valued because they provide a measure of a student's abilities as well as some incentive for using those abilities

Inquiry (Inq): regarding the purpose of education, stresses the value of studying the relationships between various fields, and the view that learning is valuable for its own sake irrespective of vocational concerns; learning how to learn is also important to high scorers

Independent study (IS): taps a preference for informal, less structured courses in which students set their own goals and standards and pursue their own interests with faculty supervision; high scorers place value on student freedom and independence in pursuing a college education

Interaction (Int): reflects a desire that faculty and students share in the planning of courses, programs, and academic requirements; high scorers prefer a collegial relationship between students and faculty in educational decision making.

The FOS scales for faculty are composed of the same items as found in the SOS inventory, but are worded in such a way that faculty respond from their point of view. An example from the independent study (process) scale is:

SOS item: "Instead of taking a regular course, I would rather have an individually tailored learning contract with a faculty member."

FOS item: "Instead of offering a regular course, I would rather have individually tailored learning contracts with students."

For adequate interpretation of any new set of inventories, one of the first steps is to amass sufficient data so that the general description of the population is known. The SOS was developed from a group of 4,279 students at eight dissimilar institutions and now

Preparatory SOS/FOS SCALES		Exploratory SOS/FOS SCALES
Achievement	1. PURPOSE (attitudes regarding the purpose(s) of a college or university education)	Inquiry
Assignment learning	2. PROCESS (preferences for different modes of teaching and learning)	Independent study
Assessment	3. POWER (attitudes regarding decision making and student-faculty roles)	Interaction

Figure 1. Educational orientations (dimensions).

has been used at over 45 colleges and universities. The current standard scores are based on a normative sample of 3,806 students, which generally represents the proportional distribution of full-time students in 4-year colleges and universities in the United States. The norms are being updated regularly as more data are collected, but it already is possible to compare student profiles from a given campus with a national sample and with institutional-type norms.

On the basis of these data, some general observations can be made. Students enrolled in different curricula have quite different profiles representing their educational orientations on the six scales. There is, then, considerable evidence that students who select themselves into various educational programs differ in their educational preferences and views (Morstain, 1973b; 1973c). For example, students in professional curricula, such as nursing, business administration, engineering, education and home economics, tend to score higher on achievement, indicating a goal- or career-directed purpose of education, than do students in arts and sciences programs. Undergraduate students in professional schools also tend to score lower on inquiry, a scale espousing the purpose of education as the exploration of ideas for their own sake. In one study (Morstain, 1973c), students who selected an experimental curriculum were those who expressed preferences for independent study options and an egalitarian relationship with faculty. In contrast, those who chose a traditional liberal arts program at the same school preferred more determination of the academic program by faculty and more formal course settings in which to learn.

Even among liberal arts students, however, there are differences which one might anticipate. Students in natural sciences are more likely to prefer a structured learning environment than are their peers in humanities and social sciences. Moreover, in a pilot project involving six liberal arts colleges, certain variations by institution appeared. The profile of student preferences at one college was as different from that at another, ostensibly similar, liberal arts school as was the profile of students at an experimental school when compared with its traditional counterpart (Stark and Morstain, 1977).

In this same liberal arts college project, information was also gathered from faculty. What is initially most striking about the data gathered are the disparities between faculty and student attitudes on the 6 scales of the FOS and SOS. For example, the data confirm previous evidence that even students enrolled in liberal arts colleges see their educational goals at least partly related to earning a living after college. Liberal arts faculty are more inclined to believe that learning for its own sake is the primary purpose of education. This finding is not unexpected, but it is one which colleges often have not dealt with properly. (See Figure 2.)

The greatest disparities between student and faculty views, in nearly all institutions studied thus far, concern the most desirable modes of learning and the question of who should decide what is to be learned. Faculty, as a group, are more likely to believe that students learn best by an orderly method, structured and assessed by those who are experts in the discipline (assignment learning and assessment). Students, on the other hand, tend to believe that self-directed study is often a preferable mode of learning (independent study) and that they, as well as the faculty, have considerable competence to plan their educational experience (interaction). Only about one-third of the faculty in the liberal arts institutions, for example, believe that students are capable of joining them as partners in decision making about educational matters, while more than two-thirds of the students believe that they should be so involved.

Of course, statements which give a broad general picture of the predominant disparities between faculty and student groups mask one of the most important uses of such data at the institutional or program level. That is, there are some students who do prefer a structured learning environment, as do some faculty. Other students, like some of their faculty counterparts, are seemingly convinced that more independent study, more interdisciplinary investigations, and a more egalitarian environment is most productive for them. It is not unusual to find that the proportions of students and faculty on individual campuses who hold each of these views differs. Thus, the studies we have been pursuing involve the identification of groups of students judged congruent and divergent with faculty on these campuses and the discovery of relationships which seem to merit further investigation and policy consideration by the institution. While general relationships are sought which will be useful for higher education in general, the use of the FOS and SOS appears most helpful on a particular campus (or even a subenvironment of a campus) for self-study and consideration of ways in which attitudinal congruence or incongruence is associated with differing outcomes for students.

For example, in one large public university it was found that for senior students (N = 99) representing 68 percent of the senior class, students who were dissatisfied with their academic programs had noticeably different educational views from students who were satisfied. The more dissatisfied students scored higher on the exploratory cluster of SOS scales than did those who were satisfied. Students who expressed greatest satisfaction tended to view education in more practical terms, desired more formal modes of instruction, and placed less value on having a collegial role with faculty. Further, students who were dissatisfied were most disparate in their views from a representative 45 percent sample of faculty (N = 237). Put another way, satisified students had views more congruent with those of faculty (Morstain, 1977a). (See Figure 3.)

Somewhat similar results seem to have been found at a much earlier stage in the students' education at a private liberal arts college for women (study by J.S. Stark, in progress). Sophomore students (N = 131) representing 79 percent of the students who were in attendance at the college for the fourth consecutive semester, were classified on the basis of their extent of satisfaction with faculty using the satisfaction-with-faculty subscale from the College Student Questionnaire (CSQ) Part II. It has been determined that students who were satisfied could be discriminated from those who were dissatisfied on the basis of the educational preferences they had expressed as measured by the SOS at the time of entrance. When SOS scale scores were used in a discriminant function analysis, it was possible to classify 71 percent of the satisfied students correctly. Satisfied students, like a 74 percent representative

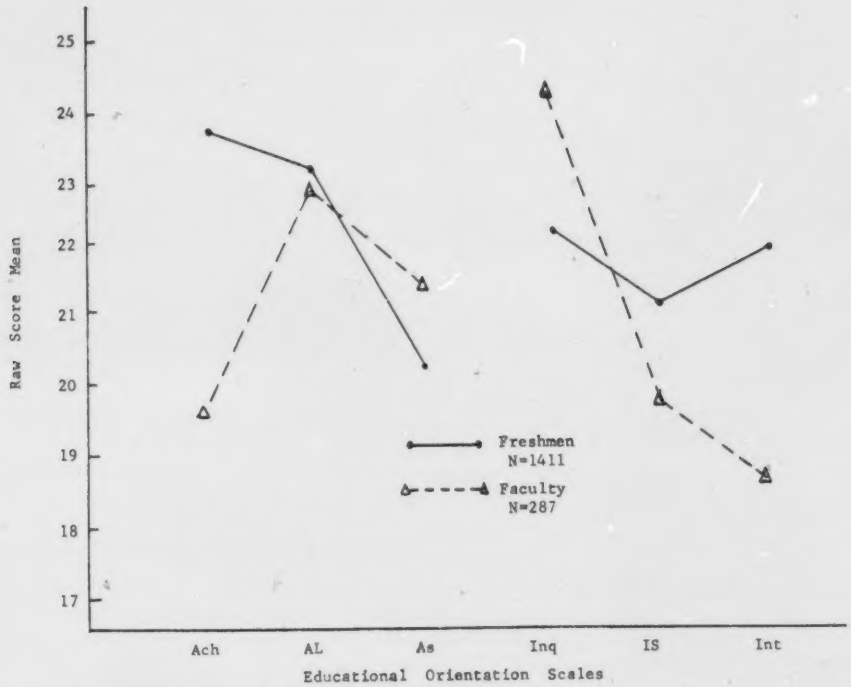

Figure 2. Orientation profiles for faculty and freshmen at six liberal arts colleges.

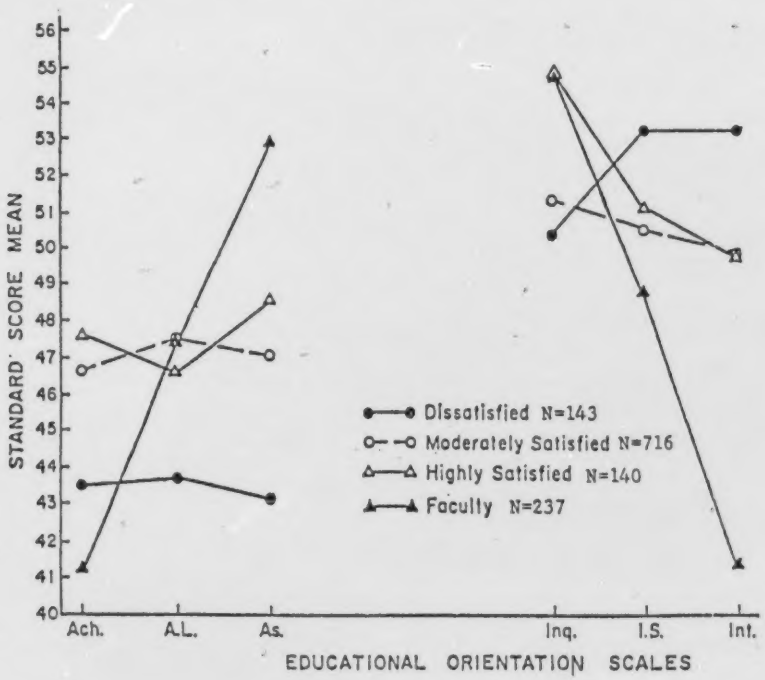

Figure 3. Orientation profile for three student satisfaction groups and faculty (university seniors).

sample of the faculty at this college, saw the exploration of ideas as their main educational goal. (See Figure 3.) It has not been similarly possible to discriminate, on the basis of SOS measures, students who, in their sophomore year, scored in the highest or lowest groups of the CSQ subscale (satsifaction with other students). Although further analysis is underway, it appears that educational views which determine satisfaction, specifically, in the academic realm may be relatively fixed at the time of entrance to college, at least for the students who attend this college. In both of these satisfaction studies (of sophomores at a liberal arts college and seniors at a public university) it is striking that the most satisfied students, considered as a group, have nearly identical views with the faculty concerning the purpose of education (See figures 3 and 4.)

One manifestation of dissatisfaction is withdrawal from a college at an early stage. In both of the studies just mentioned, the most dissatisfied students may already have left the college. No information is available about students who withdrew early from the large university, but a study was done of students who withdrew from the small liberal arts college (Stark, 1975). Of 236 students initially enrolled in the study's entering class, 46 had withdrawn by the end of the freshman year. Those students who left very early differed from "continuing" peers in their preference for more independent learning opportunities and more egalitarian relationships with faculty. In this regard, the opinions of the group of students who left, even when they first entered the college, were more disparate from opinions of faculty than were opinions of students who remained to continue for the sophomore year. (See Figure 5.)

A further analysis by Stark (in progress) of the same class considers students who withdrew during or after the sophomore year, but before the beginning of the junior year. These students, unlike their classmates who left earlier, did not differ from the students who remained on dimensions of educational process or power relationships as measured by the SOS, but did differ on the same dimension (inquiry) which characterized those students who were dissatisfied with faculty as sophomores. A 2-stage rationale is tentatively postulated for attrition at this college, although no conclusions can be extended yet to other institutions.

At a more specific level, that of the individual course, an examination has been made of the relationship of faculty and student educational attitudes towards course ratings given by students for professors teaching their classes. (Morstain, 1977b). Students (N = 359) and their instructors in nine varied undergraduate courses at a public university completed the SOS and FOS respectively. Students also completed the Student Instructional Report (Centra, 1973). Generally, students whose educational views were incongruent with those of their instructors gave different ratings when evaluating their instructors than did those whose views were congruent with those of the instructors. But the curvilinear relationship expected was not found (congruent students would give the highest course/instructor ratings, while incongruent students would give the lowest ratings). Rather, students whose views were incongruent with those of their instructors, but who scored lower on a given SOS scale, tended to evaluate instructors more negatively, while other students, also incongruent but with scale scores higher than that of the instructor, evaluated him or her most positively. Congruent students formed a middle-range group in their ratings of instructors. Since this was a pilot study at one institution, the relationship of congruence of educational attitudes to student ratings of instructors bears additional investigation.

Longitudinal studies are underway which will enable us to determine the stability of the educational attitudes of students in different settings. One might hypothesize that many students who decide to remain in a particular academic environment for a 4-year period would tend to become more like the faculty in their educational attitudes. On the other hand, students whose attitudes are extremely disparate from those of the faculty might experience alienation or a "backlash effect," moving, instead, farther from faculty views. It has already been shown in one college that students in an experimental curriculum which emphasized self-directed study experienced an accentuation over a year's time of those favorable attitudes they already held toward such a learning process (Morstain, 1973c). In addition to determining the direction of attitude change in different educational environments, it is also important to seek the factors which contribute to change and stability in educational orientations.

Information on the faculty population is still being collected; a norm group which is representative of the faculty population in 4-year colleges and universities is not yet available. For a public university, the six scales for the faculty inventory have been shown to have an internal reliability about the same as that of the parallel student scales (alpha coefficients ranged from .69 to .89). Faculty, like the students, appear to differ in educational views according to their disciplinary orientations. A distinct relationship has been found between scores on the FOS scales and the classification of a sample of faculty at a large public university into Holland's vocational choice categories based on academic discipline (Morstain and Smart, 1976). Evidence from the study of six liberal arts colleges (Stark and Morstain, 1977) seems to indicate that, in this population, more experienced faculty, faculty with more than 10 years of teaching experience, score significantly higher on the preparatory scales (achievement, assignment, learning, and assessment) than do their less-experienced colleagues. No differences were found on any of the orientation scales between faculty at the liberal arts colleges who were satisfied with the educational goals of their school (82 percent) and those who were dissatisfied (18 percent) with the school's educational goals. Other variables have been explored for the six colleges as a group and on a college-by-college basis.

Discussion

Relationships discovered in a number of these studies support the desirability of conducting research on academic satisfaction, attrition related to academic dissatisfaction, and other potential associates of congruence/incongruence in student and faculty attitudes in a specific milieu—small colleges or subenvironments of a large college with a homogeneous academic ethos. For example, grouping together all students in a large public university on measures of satisfaction may obscure important relationships. Professional students

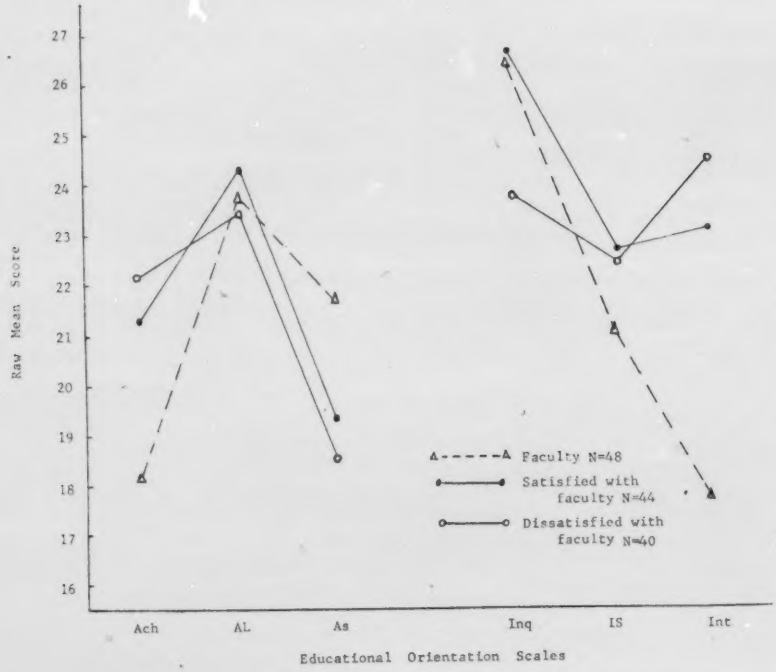

Figure 4. Orientation profiles for two student groups and faculty (college sophomores).

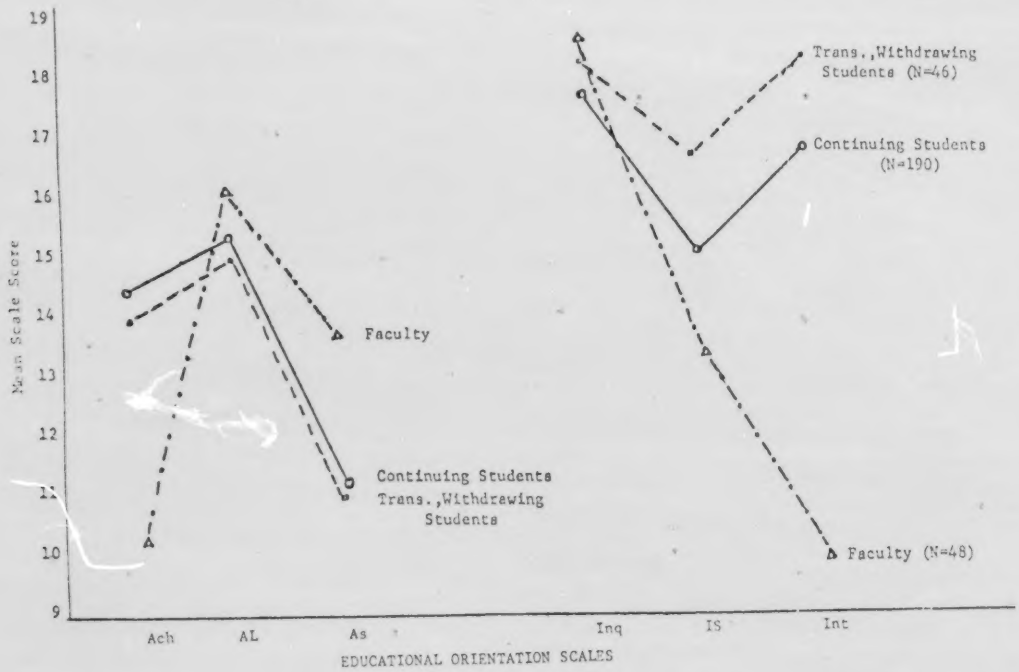

Figure 5. Mean scale scores on selected educational orientations for faculty, continuing students, and students who withdrew or transferred (private liberal arts college).

222

differ from arts and science students in their views of educational purpose, process and teacher-student relationships. Thus, one group of students may be satisfied with their academic programs for the same reasons that another group is dissatisfied. Most prior research has examined the relation of student-institution fit to student outcomes on an institution-wide or cross-institutional basis. It may be that patterns most amenable to profitable discussion and adaptive response by colleges will emerge more meaningfully when research is concentrated on various program areas within institutions. The results, thus far, indicate that the orientations surveys may exhibit their greatest potential as institutional research tools in specific settings where action implied by the findings may be contemplated.

Several questions with potential for action research have emerged as we have gained more information about the relationship between student and faculty orientations, but attempts to answer them have not yet been initiated. Is it possible to match students with educational advisors and classroom teachers on the basis of educational preferences as expressed on the SOS and FOS? What will be the results of such a matching? In point of fact, counselors in many colleges have been matching students and faculty intuitively for years. And, particularly in recent years, when older students returning to school have indicated a desire for relatively structured learning experiences, they have been assigned for counsel to faculty generally believed to provide appropriate structure and support. A systematic matching of students and faculty on the basis of measured educational preferences has not yet been attempted.

Considerable evidence indicates that students who seek certain academic programs have educational attitudes similar to those of other students who also enroll in those programs. Furthermore, the faculty can be distinguished by educational attitudes which are associated with their fields of expertise. Might it be possible to identify students who, on the basis of their educational preferences, could be predicted to be dissatisfied with a particular program because the curricular-instructional philosophy is at odds with what they believe most appropriate for them? If such a potential identification could be made, counselors could be ready to provide the proper support at the time the student discovers this incongruence and help him or her resolve problems that may arise.

Similar considerations could be extended to the admissions scene. Elucidation, for the benefit of students, of the educational philosophies of faculty members would be in keeping with the spirit of providing better information to students choosing among institutions and among programs within institutions. Students are well aware of their own educational preferences (although no inference can be made from this that what they prefer is what will best facilitate their learning) and, if they are to have the opportunity and responsibility of making informed choices, they might well know the professor's philosophy and intended procedures before a course begins. In any case, they will become aware of it in a very short time after enrollment. Prior research indicates that entering freshmen students have an unrealistic idea of what they will encounter in college and, thus, are subject to extreme disillusionment within a few weeks after their first semester begins (Stern, 1970). Such a phenomenon might be prevented by more openness about the orientations professors actually implement in the classroom.

There are many implications for more effective and efficient use of faculty members on the basis of the preferences they express on the Faculty Orientations Survey. What, for example, is the effect of these attitudes on the formation of teams of faculty for joint teaching efforts? Is it reasonable to expect that faculty members who view the educational process quite differently can work well together? Is it possible to pair faculty members with divergent views in such a way that one or both of them will change their attitudes? Which faculty have a proclivity for interdisciplinary exploration of ideas and which feel so strongly about their own disciplines that they probably will be non-contributing members of an interdisciplinary team? Which faculty have so little confidence in students' abilities to be involved in the designing their own learning experiences that they logically would not be the ones asked to serve as mentors in self-directed programs?

Conclusion

Colleges, and individual programs within colleges and universities, differ widely in terms of the particular academic ethos which attracts and retains certain types of students. Faculty help to shape the curricular-instructional environment, both in their role as formulators of academic policy and as implementors of particular teaching styles in the classroom. Students make judgments among institutions, choosing one which they believe will best suit their needs and one in which they hope to find the learning environment hospitable. All too often, choices are based on inadequate information and knowledge; the instructional environment is most commonly a missing element in such decisions. Resulting conflicts are manifested in disillusionment, dissatisfaction (or even alienation) of students, in campus debates based on emotional rather than rational grounds and sometimes in departure of the student from the institution which he or she had initially viewed as a desirable choice.

Based on their individual orientations, faculty debate policy and devise curricular processes, sometimes with little understanding of student-learning style preferences. Attempts at improvement of teaching, at least as reflected in better student ratings, may fail because some students feel that the particular instructor's style can never result in a good learning environment for them.

Administrators encourage interdisciplinary efforts that fail when the faculty involved discover that they cannot agree on even the basic purpose of the course, much less the process through which the learning experience is to be implemented. In some colleges, career-oriented programs are tried and abandoned because they conflict with the prevailing educational philosophy of faculty, while attempts in other colleges to broaden the liberal education components fail for precisely the same reasons.

For an institution to be responsive to changing educational needs of students, to use its faculty resources effectively and to maintain institutional viability, a necessary first step is to better understand the educational views and preferences of the key par-

223

ticipants, namely, the students and faculty. Where these views conflict, the conflict must be faced, the reasons for differences ascertained, and experimentation undertaken to facilitate optimum matching of students and faculty. Consideration should be given to recognition of more than one serviceable academic environment in order to accommodate the diversity of student and faculty views. The institutional research technique presented here is one direct method of detecting potential conflict and developing better understanding of the person-environment interaction within a given institution.

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THE RELATION OF FRESHMAN STUDENTS' SOCIAL AND ACADEMIC INTEGRATION TO ATTRITION

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Recent increases in the costs of higher education and projections of a decline in the number of college-age persons during the 1980s have served only to exacerbate institutional concerns about the nature and remedies of student attrition, especially in the private sector where institutional budgets are so closely tied to enrollment levels. Efforts to understand such a phenomenon and to reduce the *misexpenditures* of personal and institutional resources that attend it have spawned an extensive, if uneven, literature on the nature and sources of attrition.

Spady (1970) and Tinto (1975) provide representative surveys of this literature, and both authors note the feast of descriptive studies of attrition, but the comparative famine of conceptual frameworks to explain it. It seems clear, as both these authors concluded, that little is to be gained by additional descriptive and theory-less research employing univariate statistical procedures for investigation of a problem one senses intuitively to be a multidimensional phenomenon.

Tinto offered a model, adopted for this study, that views attrition as a process directly related to a student's level of integration in both the social and academic systems of an institution. The model seeks to distinguish conceptually among those interactional patterns that lead to varying forms of dropping out normally subsumed under the general rubric of attrition. It is with the explanatory value of that model, specifically as it relates to voluntary withdrawal, that this paper is concerned.

According to Tinto,

> Given individual characteristics, prior experiences and commitments, . . . it is the individual's integration in the academic and social systems of the college that most directly relates to his continuance in that college. Given prior levels of goal and institutional commitment, it is the person's normative and structural integration into the academic and social systems that lead to new levels of commitment. Other things being equal, the higher the degree of integration of the individual into the college systems, the greater will be his commitment to the specific institution and to the goal of college completion. (p. 96)

In addition to failing to base attrition investigations on available sociological or psychological theory, researchers have rarely adopted designs which take into account heterogeneous variable sets. The bulk of the research has been limited to assessments of homogeneous characteristics which may be associated with student attrition. Studies have focused, for example, on personality factors, social integration, academic involvement, and their relationship to attrition. Much less information is available on the relative potency of one variable set, as compared with another, for explaining student withdrawal. The present study sought to avoid both of these shortcomings.

Specifically, this investigation sought to determine (a) the degree to which a freshman's integration in the social and academic systems of a large, private university is functionally related to voluntary attrition and (b) the relative potency of these two dimensions for explaining voluntary attrition.

Methodology

Instrument. If a student is fully integrated in the social and academic systems of an institution, then presumably that individual will have more positive perceptions of those two dimensions of the institutional environment, participate more extensively in social activities, and perform at a higher level of academic achievement than will less fully integrated students.

To assess levels of normative integration in the academic system of the university, subjects were asked to indicate their perceptions of their academic programs. These self-reports were supplemented by each subject's cumulative grade point average, taken directly from students' academic records, at the end of the freshman year. Grade point average is specifically identified by the model as a measure of a student's structural academic integration (p. 92). Assessments of subjects' integration in the social system of the university were made on the basis of their perceptions of their nonacademic lives, the number of extracurricular activities in which they reported participation, and the number of times they reported interacting informally with faculty members outside of class for ten minutes or more.

Tinto acknowledges that "interaction with the faculty not only increases social integration, and therefore institutional commitment, but also increases the individual's academic integration" (p. 109). However, he places that variable clearly within the social integration portion of his conceptual scheme (p. 95). For that reason, this study has treated the amount of students' informal contact with faculty members accordingly.

As a measure of students' ratings of their academic programs, students were asked to rate the statement "I have found my academic program at S.U. to be" on the Adjective Rating Scale (ARS). (See Kelly and Greco, 1975). The ARS was also used by subjects to respond to the statement "I have found my nonacademic life at S.U. to be." The ARS consists of twenty-four adjectives (for example, good, enjoyable, demanding, boring, useless, practical, interesting) against which the respondent rates certain statements using the following four-point scale: 1 = extremely, 2 = very, 3 = somewhat, and 4 = not at all. (Information on the development, factor analytic studies, and reliability of the ARS is available upon request.)

Additional items on the questionnaire asked students

225

to indicate both the number of times during the spring semester they had met with faculty members informally outside of class for ten minutes or more and also the number of organized extracurricular activities in which they had participated during the year.

Sample. A simple random sample of 500 freshmen was drawn by computer from the population of freshmen enrolled in the College of Arts and Sciences at Syracuse University (SU), a large, private university with a total undergraduate enrollment of 10,000 students. The College of Arts and Sciences enrolls approximately half of all entering freshmen. At the beginning of the spring 1975 semester, the population from which the sample was drawn was approximately 54 percent male and 46 percent female.

Instruments were distributed by mail in late March 1975, and usable responses were obtained from 379 subjects, yielding a response rate of 75.8 percent. The representativeness of the sample was suggested by the relatively high rate of response and a chi-square analysis indicating nonsignificant differences between the distribution of responding males and females and the distribution of males and females in the population from which the sample was drawn.

In September 1975, it was determined that 66 members of the original sample had not returned for the start of their sophomore year. Six of these had been denied permission to register for academic reasons, and they were dropped from the analyses because the number was too small to treat as a discrete group. Thus, "leavers" in this study voluntarily withdrew.

A random sample of 60 of the 313 persons staying was drawn for purposes of making comparisons with the group of persons leaving. A series of goodness-of-fit tests and comparisons of variable means and standard deviations indicated that this sample of 60 was representative of the larger sample from which it was drawn. The remaining 253 persons staying were held over for use in a cross-validation analysis, which is discussed in the next section of this paper.

Analysis. Analysis of the data began with a principal components analysis of subjects' ARS responses. A separate analysis was done for each of the two statements rated. Following Kaiser's (1959) varimax criterion, components with eigenvalues ≥ 1.0 were extracted and subjected to varimax rotation. The rotated components will hereafter be referred to as factors.

Mean factor scales were computed by using characteristic variables with rotated loadings of .40 or higher rather than a complete estimation method (in which variables, regardless of their factor loadings, are used) to increase the internal consistency (alpha) reliability of the individual factor scales (Armor, 1974). Such a procedure, however, may result in the loss of orthogonality and lead to substantial inter-scale correlations. It was judged preferable to optimize the internal consistency reliability of each scale despite the potential loss of orthogonality, since the latter situation can be dealt with effectively by employing multivariate procedures which control for the correlations among variables, specifically discriminant analysis.

To determine if the measures of academic and social integration could differentiate independently of one another between the groups of persons staying and persons voluntarily leaving, the two variable sets were subjected separately to multivariate analysis of variance and to stepwise discriminant analysis. To assess the relative contributions of academic and social integration measures to the separation of persons leaving and persons staying, the combined variable sets were also employed as predictors in a stepwise discriminant analysis.

Finally, a classification analysis based on the pooled covariance matrix and individual discriminant scores was performed. In this portion of the analyses, as a means of cross-validating the predictive power of the functions obtained, the 253 persons staying, whose scores had not been employed in the derivation of the discriminant function, were also classified.

Results

Factor analysis of students' ARS ratings of their academic programs and their nonacademic lives yielded five and four factors, respectively, with eigenvalues greater than 1.0. The compositions of these two sets of factors are shown in Table 1. The alpha (internal consistency reliability) coefficients and the percent of explained variance accounted for by each factor are also shown. The last factor in each group was excluded from further analyses because of low alpha reliability or uninterpretability. Each factor has been given a tentative name describing what was believed to be the underlying psychological construct tapped. The reader is cautioned, however, against attributing surplus meaning to the factors beyond the scales which characterize them.

Table 2 displays the means, standard deviations, and univariate analysis of variance F-ratios for each of the ten predictor variables, as well as the multivariate analysis of variance F-ratios, discriminant function chi-square values, and standardized discriminant weights for each of the variable sets when analyzed separately. As the multivariate F-ratios indicate, the academic integration set differentiated significantly between the vectors of means at the .01 level for persons leaving and persons staying, while vectors of means for the two groups on the social integration set were significantly different at the .001 level. Because of the intercorrelations among the variables within and between variable sets, the univariate tests of significance are not independent, and, therefore, the probability statements associated with them are difficult to interpret reliably. Since discriminant analysis takes into account the correlations among variables, the information it provides is more meaningful.

A test of the significance of the discriminant function for the academic integration set (Part A of Table 2) produced a X^2 value of 15.572 (d.f. = 5, $p < .01$) and a canonical correlation of .355 with group membership. Interest value in the academic program made the largest change in Rao's V (an index of the amount of incremental discrimination attributable to each variable, given those variables which are already in the equation) and also contributed the most to the discriminating power of the function, as indicated by its standardized discriminant weight. As shown in Table 2, persons staying reported having significantly more interest in their academic programs than did persons leaving. (Recall that the ARS is scored from "1 = extremely" to "4 = not at all"). The practical appeal factor of students' ARS ratings of their academic programs also made a contribution to the function, but slightly less than two-thirds as much as the interest value factor. Given Tinto's

Table 1

Varimax Rotated Factor Loadings for Students' Adjective Rating Scale Responses
(N=379)

I have found my academic program at S.U. to be . . .		I have found my nonacademic life at S.U. to be	
Factor	Loading	Factor	Loading
Interest Value		*Interest Value*	
Enjoyable	.78	Exciting	.84
Exciting	.76	Enjoyable	.81
Stimulating	.74	Good	.78
Enlightening	.71	Interesting	.72
Interesting	.67	Stimulating	.71
Rewarding	.66	Rewarding	.71
Good	.62	Enlightening	.67
Provocative	.58	Boring	-.63
Informative	.54	Worthwhile	.61
Alpha reliability = .90		Dull	-.60
% Variance = 23.1%		Valuable	.59
Dullness apathy		Provocative	.57
Irrelevant	.75	Alpha reliability = .94	
Dull	.71	% Variance = 27.7%	
Boring	.66	*Practical Appeal*	
Useless	.65	Irrelevant	-.72
A Waste	.62	Useless	-.71
Alpha Reliability = .85		A Waste	-.70
% Variance = 14.1%		Relevant	.63
Practical appeal		Practical	.54
Necessary	.74	Informative	.54
Practical	.60	Necessary	.49
Valuable	58	Alpha Reliability = .84	
Worthwhile	.51	% Variance = 17.7%	
Relevant	.44	*Demand/Challenge*	
Alpha reliability = .82		Demanding	.76
% Variance = 11.0%		Challenging	.75
Difficulty/Challenge		Difficult	.74
Demanding	.86	Different	.42
Difficult	.85	Alpha reliability = .69	
Challenging	.69	% Variance = 9.6%	
Alpha reliability = .78		*Unnamed*	
% Variance = 9.3%		General	.70
Uniqueness		% Variance = 5.5%	
General	-.70		
Different	.55		
Alpha reliability = .27			
% Variance = 4.7%			
Total variance explained = 62.2%		Total variance explained = 60.5%	

Note: The complete factor matrix and related information are available upon request from E.T. Pascarella and P.T. Terenzini, Syracuse University.

Table 2

Means, Standard Deviations, Univariate *F*-Ratios, Amount of Change in RAO's V^1, and Standardized Discriminant Weights for Persons Leaving and Persons Staying, on Ten Dependent Variables, Analyzed as Separate Sets

Variable/set	Persons staying (n=60) Mean	S.D.	Persons leaving (n=60) Mean	S.D.	Univariate *F*-ratio (df = 1/118)	Change in Rao's V^1	Standardized discriminant weights[2]
A. *Academic integration set*							
Interest value (academic program)	2.48	.55	2.83	.46	14.60***	14.54***	-.71
Dullness/apathy (academic program)	3.43	.50	3.19	.55	6.34*	.10	-.13
Practical appeal (academic program)	2.32	.60	2.69	.55	12.56***	1.13	-.44
Difficulty/challenge (academic program)	2.37	.63	2.49	.56	1.16	.51	.16
Cumulative grade point average	2.45	.72	2.45	.75	.01	.66	-.18
Multivariate F = 3.37, with 5 and 114 degrees of freedom ($p < .01$)							
Discriminant function $X^2_{(5)}$ = 15.572, $p < .01$. Canonical r = .355							
B. *Social integration set*							
Interest value (nonacademic life)	2.03	.58	2.36	.59	9.08**	3.85*	.84
Demand/challenge (nonacademic life)	2.71	.56	3.06	.47	13.23***	11.45***	1.03
Practical appeal (nonacademic life)	1.79	.51	2.00	.58	4.69*	.13	-.18
Informal interaction with faculty	5.75	7.11	2.07	2.65	14.14***	14.14***	-1.22
Number of extracurricular activities	1.77	1.72	1.47	2.32	.64	.00	.02
Multivariate F = 5.72, with 5 and 114 degrees of freedom ($p < .001$)							
Discriminant function $X^2_{(5)}$ = 25.837, $p < .001$. Canonical r = .448							

[1] Indicates increase in discrimination attributable to each variable in set.
*$p < .05$ **$p < .01$ ***$p < .001$

[2] Relative size of weights *not* comparable between sets.

NOTE: The ARS is scored from 1 = extremely to 4 = not at all. Thus, lower scores are more positive on interest value, for example, while the reverse is true on dullness/apathy.

229

theory, this indicates a significantly higher level of academic integration among persons staying than among those voluntarily leaving. From the discriminant weights, it also appears that cumulative grade point average does not discriminate meaningfully between the two groups.

The discriminant analysis of the social integration variables set (Part B of Table 2) yielded a function with a X^2 value of 25.837 ($df = 5$, $p < .001$) and a canonical correlation coefficient of .448 with group membership. The amount of informal interaction with faculty outside the classroom and the demand or challenge level found in students' nonacademic lives were the principal contributors to the separation between the groups. This is reflected both in the amount of change in Rao's V attributable to each of those variables and in the relative magnitudes of their standardized weights. The interest value factor for students' ARS ratings of their nonacademic lives made a moderate contribution to the function.

As indicated in Table 2, those who stayed reported significantly more informal contacts with faculty members and also found their nonacademic lives to be significantly more demanding and challenging than did those who left. This finding strongly suggests that the former were significantly more involved in the social system of the university than the latter.

Results of the discriminant analysis of the combined variable sets are shown in Table 3. (In the interest of parsimony and conceptual clarity, only those variables with an F-to-enter of 1.0 or greater were permitted to enter the equation.) This portion of the analysis indicates the contribution of only the most discriminating variables and permits a simultaneous assessment of the importance of academic and social integration in students' decisions regarding withdrawal. The discriminant function yielded a X^2 value of 32.413 ($df = 6$, $p < .001$) and a canonical correlation with group membership of .496. The standardized weights indicate that the demand/challenge factor of students' ARS ratings of their nonacademic lives is the single most important contributor to the separation of the two groups, followed closely by the amount of informal interaction with faculty members. Notably, cumulative grade point average and the number of extracurricular activities did not enter the equation. Moreover, the correlations between variables of the two sets were modest (range of $r = .00$ to .36, independent of sign; median $r = .20$).

To gain some indication of the sharpness of the separation between the groups and to ascertain the reliability of the discriminant functions, the discriminant scores of the 60 persons leaving and 60 persons staying were subjected to classification analysis. The 253 known to be staying, whose raw scores had not been employed in the derivation of the functions, were used as a cross-validation group in the classification analysis.

The academic integration variable set correctly classified slightly more persons staying (68.3%) than persons leaving (65.0%) and 57.3 percent of the cross-validation group. For the social integration set, the proportions of those leaving and those staying that were correctly classified were roughly reversed, 70.0 percent of the persons leaving and 63.6 percent of the persons staying being properly assigned to their group. The social integration variables permitted correct classification of 56.1 percent of the cross-validation group. Not surprisingly, when the sets were combined, the percentages of all three groups correctly classified were increased: 78.3 percent for those persons leaving, 66.7 percent for those staying, and 59.3 percent for the cross-validation group members. In all three instances, the proportion of cross-validation stayers correctly classified represented significant improvements on chance: for the academic integration variables, $p < .025$; for the social integration measures, $p < .05$; and for the combined sets, $p < .002$.

The questionnaire also asked respondents to rank-order faculty members, academic work, other students, and extracurricular activities as sources of positive influence on their intellectual growth and personal development. Directional Mann-Whitney U-tests (Hays, 1963, pp. 633-635) for the significance of differences in

Table 3

Stepwise Discriminant Analysis Results for Academic and Social Integration Variable Sets Combined (F-to-Enter ≥ 1.0)

Step	Variable	Change in Rao's V[a]	Standardized discriminant weights
1	Interest value (academic program)	14.54***	- .30
2	Demand/challenge (nonacademic life)	10.59***	-1.00
3	Informal interaction with faculty	5.94*	.93
4	Difficulty/challenge (academic program)	2.44	.66
5	Interest value (nonacademic life)	2.59	- .56
6	Practical appeal (academic program)	2.30	- .69

[Discriminant function $X^2_{(6)} = 32.413$, $p < .001$. Canonical $r = .496$]

[a] Indicates increase in discrimination attributable to each variable.

*$p < .05$ **$p < .01$ ***$p < .001$

means for ordinal data showed that persons staying ranked faculty members significantly higher as a positive influence on both their intellectual growth ($z = -2.46$, $p < .01$) and on their personal development ($z = -2.77$, $p < .01$) than did persons leaving. This finding, coupled with the fact that those who were staying had a significantly higher frequency of informal contact with faculty than did those leaving, further tends to support Tinto's view that informal interaction with faculty members is related both to academic and to social integration and, consequently, according to the theory, to attrition and retention as well.

Background characteristics were not included in the design because data on some subjects were incomplete. However, supplementary post hoc analyses indicate no statistically reliable differences (between persons in this study who were leaving and staying) with respect to sex, academic aptitude, as measured by SAT verbal and quantitative scores, or preregistration expectations of the college environment, as measured by College Characteristics Index (CCI) scores (Stern, 1970). There also were no reliable differences observed between the groups, following a semester and a half in attendance, in regard to their expected major courses of study, orientations toward college as defined by the Clark-Trow typology (Gottlieb and Hodgkins, 1968), or primary preference of educational goals. Furthermore, a series of canonical correlation analyses indicated that students' ARS ratings of their academic and nonacademic experiences were not significantly related at $p < .05$ to either their personality needs, as measured by the Activities Index (AI) (Stern, 1970), or to their expectations of the institutional environment (CCI). The data for AI and CCI were available for 242 of the 379 subjects.

Discussion

Consistent with Tinto's theory of attrition, the results of these analyses suggest that social and academic integration are independently, and approximately equally, important in freshman students' decisions to remain or withdraw from an institution. An important implication of this finding is that there appears to be no single area that can be addressed in institutional efforts to reduce substantially the rate of attrition among freshmen. Rather, major savings may be realizable only through broadly conceived institutional efforts—strategies which touch both the social and academic environments of an institution.

One such strategy is suggested by the findings (a) that the second largest contributor to the separation of the groups was the amount of students' informal contact with faculty members (the more frequent the contact, the more likely the student is to remain), (b) that the persons staying ranked faculty members significantly higher as a source of positive influence on both their academic and social development than did persons leaving, and (c) that informal interaction with faculty correlated somewhat higher with normative academic integration measures (range of $r = .15$ to .36, independent of sign) than with normative social dimensions (range = .07 to .14).

These results point to what appears to be a critical role for faculty members in facilitating the integration of students into both the social and academic systems of an institution. Although Tinto's theory specifies a key role for faculty in such integration, the findings of this study imply that informal interaction with faculty may be at least as important to the normative academic integration of students as to their social integration. This position is supported by the results of an earlier study (Pascarella and Terenzini, 1975). Students who interacted more frequently than their peers with faculty members had more positive perceptions of both their academic programs and nonacademic lives, and they rated faculty higher as a source of positive influence on both their personal and intellectual growth. These salutary benefits, moreover, appeared to accrue to students with a wide range of backgrounds, academic aptitudes, educational goals, personality characteristics, and expectations of college.

This investigation cannot demonstrate the utility of Tinto's model for studying attrition at schools smaller than SU, but the conceptual framework has intuitive merit for guiding future research on attrition at higher education institutions of all sizes. On the basis of the findings reported here, attacking attrition as a behavioral outcome of students' nonintegration in both social and academic spheres would appear to be profitable from both research and policy perspectives.

This study highlights at least one area amenable to institutional policy influence: the amount of informal contact students have with faculty members. Institutional policies or procedures that promote such interaction need to be identified and strengthened. Those which impede such contact should be altered. Faculty reward systems might be reviewed and amended, where necessary, to encourage more frequent informal faculty contact with students and to reward it when it does occur. Small sums of money might be earmarked to help faculty members defray the costs of entertaining students in their homes. Whatever strategies are ultimately adopted, however, the results of this study suggest that students' social and academic integration into the institution are likely to be increased through interaction with faculty and the chances of their dropping out reduced correspondingly.

Indeed, the policies, practices, and programs of a wide range of institutional offices might be reviewed to identify those which promote or hinder students' sense of belonging. Wherever and whenever students can be more fully involved in the life of an institution, the likelihood of their remaining will be enhanced. And, given the shrinking applicant pool likely to confront most institutions of higher education in the future, policies aimed at retaining students may be much more cost effective than seeking replacements for the students who come and then leave.

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DIFFERING VIEWS ON THE CRITERIA AND PURPOSES OF STUDENT RATINGS OF INSTRUCTION

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Associated with current pressures toward performance-based teacher accountability and consumer satisfaction in higher education is the increasing importance placed on the teaching function. The use of student ratings has become widespread in institutions whose natures and goals cover the spectrum of postsecondary education. Student ratings have been used by faculty members to guide them in the improvement of their teaching, by departmental chairpersons and academic administrators in promotion and tenure decisions, and even by students in selecting their courses. And yet, perhaps no single issue currently divides the academic community more than does the question of the value and use of such ratings.

Although much research has been published in the recent past on the internal validity of student ratings, comparatively little systematic data have been gathered on the criteria upon which students rate their instructors and on the purposes for which the ratings are used (Costin, Greenough, & Menges, 1971). The research reported in this paper attempts to shed some light on these issues as well as to illustrate one model by which an institution of higher education can explore, assess and decide policy concerning the evaluation of teaching effectiveness by its student consumers.

Numerous factor analytic studies of student ratings have routinely observed three or four categories of information which are dimensions commonly available on many student rating forms. McKeachie and Lin (1973) found four common factors: skill, structure, group interaction, and difficulty. These factors appeared regularly in every sample studied. In a review of 11 factor analyses of ratings, Kulik and McKeachie (1975) found four general factors, skill, rapport, structure, and overload (work difficulty) on which student ratings were clustered. Similar factors were reported by Centra (1973) in analyses of ratings from 9,700 student respondents to his Student Instructional Report (SIR).

Although rating instruments appear to tap similar dimensions of the teaching-learning process, little data have been available to indicate whether students, in rating courses and instructors, tend to emphasize the same criteria which faculty members and administrators (both of whom use the ratings for various purposes) believe to be most important. Indeed, Hildebrand, Wilson, and Dienst (1971) found a considerable discrepancy between faculty and student ranking on similar criteria of effective teaching.

Perhaps some of this apparent disparity may be explained by differences in the perceived needs of the various groups for which the ratings are directed. While teaching and learning have always been the central functions of postsecondary education, it is the faculty role as scholar and researcher which has been the traditional standard for recognition of institutional excellence and faculty competence. However, as the student consumer spirit, with its demands for quality, meaningful, and relevant education, became widespread, many institutions entered what might be termed a student-oriented era. Among other innovations, they initiated student evaluation of instructional quality. Thus, it may be that the validity of student ratings of instruction must consider not only the instructor's behavior in the classroom, but also the instructional expectations held for him by administrators, colleagues, and students and the instructor's perceptions of their expectations. For instance, an instructor may consider his knowledgeability of his discipline and the purity of its transmission as the most essential ingredients in his teaching. Egalitarian and consumer-conscious students, on the other hand, may regard interaction with the instructor and the clarity with which material is presented as the most important criteria of effective teaching.

In addition, there is a need to clarify and compare the appropriateness of student ratings as perceived by both the student raters and the faculty ratees for the various purposes for which they are most commonly applied (Costin, Greenough, & Menges, 1971; Kulik & McKeachie, 1975). Little research has been done to date to establish the appropriateness of student ratings for instructional improvement and faculty development efforts. Nor has there been much research reported on the utility of student ratings for purposes of students' course selection and faculty personnel decisions.

With increased competition to attract and keep undergraduates, and hence a growing concern for the quality of its instruction, a large metropolitan university initiated a two-year experimental program of student ratings which had as its purposes (a) the encouragement of self-improvement by faculty, (b) provisos for better student-consumer information for course selection, and (c) more ample information for faculty personnel decisions. After using the Student Instructional Report (SIR) (Centra, 1973) to collect ratings from 3,600 undergraduate courses involving more than 45,000 student responses over a two-year period, the university had to decide upon a more permanent policy concerning the student-rating program and the appropriateness of the rating instrument used in achieving its purposes.

The specific purpose of the present study was to survey the university community of students, faculty and departmental chairpersons to seek their responses to three major questions: (a) What are the most important criteria of teaching effectiveness upon which instructors should be rated by students? (b) For what (if any) rating purposes are the applications of these criteria most appropriate? and (c) How successfully have the rating procedures and instrument been able to reflect these

233

criteria and purposes?

Method

Two comparable survey instruments were developed and administered at the end of the final semester of the two-year experimental rating period. One questionnaire was sent to faculty members (n=369) and departmental chairpersons (n=58) comprising a representative sample of their colleagues in the university's five undergraduate colleges. The second instrument was administered in class during a peak class hour to a sample of 1,405 undergraduates throughout the university. A study of the demographic characteristics of those responding suggested that, as a group, they were also fairly representative of the student population directly involved in the rating program.

Findings and Discussion

Figure 1 portrays the mean-ranked order of importance with which various criteria of teaching effectiveness were judged by student and faculty respondents. When asked their opinions as to the importance of these criteria, they were fairly unanimous in the order of their rankings. Each ranked the instructors's knowledge as the most salient criterion and the instructor's willingness to interact with students as the second most important criterion for effective teaching. These were followed by the criteria of clarity of course structure and work demanded (in decreasing order of importance). Because the mean rankings of departmental chairpersons were virtually identical to those of other faculty members, they are not reported separately.

While the order of ranking remained the same across the two groups sampled, the mean value attached to instructor's "knowledgeability" was higher for faculty than for students, while on all other factors the reverse was true. These differences in mean rankings between faculty and students were found to be statistically significant ($p.<.05$). Thus, there was some evidence to suggest differences in value systems between students and faculty which went in a direction that favored knowledge as most important for those who often sat as one among many in classroom situations that tended to minimize close contact with the instructor.

Nevertheless, the main point that seems to emerge from these findings is that there is considerable unanimity within the university community regarding the most important instructional values. This is encouraging because it may mean that students in rating their courses and instructors, contrary to what many faculty expected, tended to emphasize the same criteria which faculty, who were to receive the feedback, believed to be most important. Although students view the willingness of the instructor to interact with them as a highly desirable trait, they, like faculty members themselves, consider knowledgeability and expertise in the discipline as equally important for effective university teaching.

To discover what students, faculty and chairpersons perceived to be the most valid purposes for gathering student ratings, respondents were asked for what primary purposes, in theory, a student rating program could be implemented. They subsequently were also asked how successfully in practice the SIR rating instrument used in the current program attained these goals. Figure 2 shows the mean ratings of the degree to which each of the three groups of respondents agreed on seven-point Likert-type scales with statements concerning the efficacy of student ratings.

Figure 2 shows that, just as with the criteria of teaching effectiveness, there was considerable unanimity among students, faculty and chairpersons concerning the most important, next most important and least important purposes which the student rating program could serve. Panel A indicates that a strong consensus exists among all three groups of respondents in the use of student ratings for feedback to instructors as an aid in the improvement of their teaching. While students did not feel as strongly about this purpose as did faculty members or chairpersons, they nevertheless maintained a strength of opinion that approached the "modestly agree" level. All three groups felt much less strongly that, in theory, rating results could help students choose their courses. However, the strength with which each group agreed with this purpose was significantly greater ($p. < .001$) than neutrality. As to the administrative purposes which student ratings theoretically could serve in the evaluation of faculty performance for promotion and tenure decisions, only the student respondents saw such purposes as desirable. But by far, the most striking finding of this research was the unanimity which seemed to exist between students and faculty in their conviction that the most important function of student ratings was the help that they could give instructors in perfecting the art and science of teaching.

Nonetheless, as is illustrated by Panel B of Figure 2, there was also considerable agreement among the three groups of respondents concerning the suitability of the SIR instrument in serving the various purposes of the

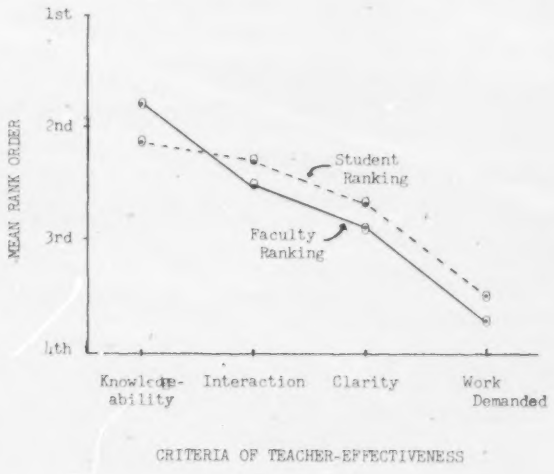
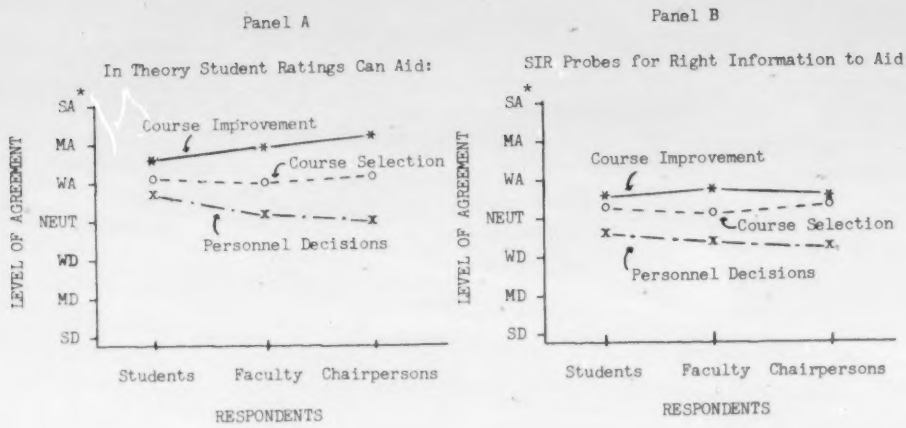


Figure 1. Mean relative ranking of four criteria thought to be of importance in determining instructor and course quality.

234



* SA = strong agreement. MA = moderate agreement. WA = weak agreement. NEUT. = neutrality. WD, MD, & SD. = weak, moderate, and strong disagreement.

Figure 2. Degree with which students, faculty, and chairpersons agree with statements concerning the efficacy of evaluation and the SIR evaluation instrument.

rating program. Only in providing feedback to instructors for the improvement of their teaching was the SIR seen as useful, but even here, departmental chairpersons expressed doubt. All groups were neutral regarding the effectiveness of the rating form in helping students select courses. The question of its suitability for supplying pertinent data for faculty promotion and tenure decisions evoked across the three groups of respondents a mean negative reaction that was significantly different from neutrality.

Further analyses of the degree of satisfaction expressed toward the SIR rating form showed that neither students nor faculty members felt that it was as effective as it might be. In general, it was faulted as being limited in the types of courses for which it was evaluatively suited. In particular, the faculty thought it had too many questions, while the students were dissatisfied with the format of its published results. All three groups recommended that the SIR rating form be modified with provision made for gathering and reporting of open-ended comments.

Because this study was set in the context of institutional research, providing results to aid academic policy decisions, it includes perhaps the first systematic collection of data concerning the attitudes and opinions of students, faculty and departmental chairpersons on implementation and use of student ratings of instruction. Although these findings are by no means definitive and are based on data from a single institution at one point in time, they may be generalizable to other large universities due to the representativeness of the institution surveyed. Many institutions of postsecondary education currently involved in decision making in this area could undoubtedly learn much from a similar assessment of their students and faculties. Additional research of this type would not only aid in deciding institutional policy on student ratings but would also contribute to the available research on the most appropriate criteria and uses of the ratings.

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STUDENT EVALUATION OF INSTRUCTION: A VALIDITY ANALYSIS

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Background

In the past ten years, the use of student ratings of instructors on our college campuses has steadily increased, with an attendant increase in the use of these student ratings in decision making related to merit increases, promotion, tenure, and institutional severance. A survey of 410 college deans found that, in the period from 1966 to 1973, the data source used by the deans to evaluate teaching which showed the greatest increase in frequency of use was systematic student ratings of instructors (Seldin, 1975). The recent AAUP Statement on Teaching Evaluation (1974) asserts that "student perceptions are a prime source of information from those who must be affected if learning is to take place. . . . Student responses can provide continuing insights into a number of dimensions of a teacher's efforts" (p. 169). It can be assumed, therefore, that the use of systematically collected student perceptions will become even more widespread in professional and instructional evaluation.

While a rather substantial body of research on student rating of instruction currently exists (see Trent and Cohen, 1973; Costin, Greenough, and Menges, 1971; and Centra and Creech, 1976, for reviews), the ambiguity or actually conflicting results of several of these studies has also led to concern among many professionals about the functional utility of student ratings. Gage (1961), for example, stated that "teachers should not be penalized because of conditions over which they have no control such as level of the course, size of the class, and whether the course is elective or required." (p. 17). Because he felt these conditions affected student ratings, he urged that such ratings not be used for purposes of promotion or institutional severance. Other, more recent statements (Kerlinger, 1971; Peck, 1971; Anthony and Lewis, 1972) have supported Gage's positions and sparked continued debate over the use of student ratings of instructors for institutional decision making.

Centra and Creech (1976) reported that their studies, and most other prior investigations, have reached the conclusion that students with better grade point averages do not necessarily rate teachers more favorably, although students who expected a lower grade than their own grade point average tended to rate their teacher as less effective. This was called a "modest source of bias in an overall rating of teacher performance" (p. 13). It was also concluded that course level and student level produced little difference in ratings. In the analysis of over 80,000 instructors, faculty rank produced no significant differences in rating, except that teaching assistants received lower ratings than the four regular faculty ranks.

With respect to course type, Centra and Creech concluded that courses conducted in the strict lecture form received the lowest ratings. Regarding class size, they further reported that, while some studies have shown no relationship, others show a slight negative trend. Their own observations indicated considerable variability, with the smallest and the largest classes receiving the generally higher ratings.

Analyses of instructional evaluation data have varied considerably, both in the approach taken and in the results produced. This study was undertaken, therefore, to determine whether signficant proportions of the variance in students' course and faculty ratings are attributable to student demographic characteristics or static course and faculty characteristics beyond the control of the instructor. Our interest was sparked by Gage's claim that these factors unduly affect the student's attitude toward the course and instructor. We, like others, are concerned that the Student Instructional Report (SIR), our evaluation questionnaire (Educational Testing Service, 1971), measures behavior-specific facets of instructional performance and is not unduly affected by variables which the instructor cannot control.

Method and Results

The principal method for estimating variance explained by static course variables and predictability of faculty ratings was stepped multiple regression. The sample employed was all of the nearly 2,000 courses (37,000 students) offered at the university in one semester. This guaranteed both a substantial sample size and a comprehensive range of course types, level, size and academic field. For each class, the ratings for all students were pooled, and the mean scores represented the element of data in the regression analysis.

Static course variables available for the regression analysis were expected grade in course, class size, student ability (self-reported prior grades), required vs. elective course, rank of instructor, instructor's number of years of teaching experience, instructor's teaching load, course type (lecture, discussion, lab, etc.,), course level (lower division, upper, graduate).

The criterion variable was the score on the final global item in the SIR questionnaire: "Compared with other instructors you have had, how effective has the instructor been in this course?", with ratings from "excellent"-(5) to "poor"-(1). This criterion variable is called the global instructor rating (GIR). Inspection of the array of correlations of these static course variables with the GIR criterion presented in Table 1 reveals that the criterion measure is significantly correlated with expected grade, class size, student ability (grade point average), and course level. To examine the predictive power of these static course variables, and to examine

Table 1

Correlations between Global Instructor Rating (GIR) and Static Course and Student Characteristics

Var. no.	Variable entered	Global instructor rating (GIR)
(1)	Expected grade	.20*
(2)	Class size	.20*
(3)	Student ability	.15*
(4)	Required vs. elective	.03
(5)	Rank	.03
(6)	Teaching experience	.05
(7)	Teaching load	.05
(8)	Course type	.05
(9)	Course level	.15*

*$p < .01$, N=1930

Table 2

Predictor Variables, Order, R and R^2 for Regressions of Student and Course Characteristics on Global Instructor Rating

Var no.	Variable entered	R	R^2	Increase
(2)	Class size	.204	.042	-
(1)	Expected grade	.264	.070	.028
(3)	Student ability	.275	.076	.006
(4)	Required/elective	.284	.080	.004
(9)	Course level	.287	.082	.002
(7)	Teaching load	.290	.084	.002
(6)	Teaching experience	.291	.085	.001
(8)	Course type	.291	.085	.000
(5)	Teacher rank	.291	.085	.000

their combined effect upon the overall rating of the instructor, stepwise multiple regression was conducted.

The results of stepwise regression, presented in Table 2, reveals that the combined predictive power of all of the static course characteristics is low (R=.291). Nonetheless, a statistically significant proportion of variance (8½%) can be explained by student or course characteristics beyond the control of the instructor. The regression indicates that, among all the variables studied, prediction rests most heavily upon class size and grade expectation. While one might ordinarily be disappointed at the low degree of predictability represented by these data, we are relieved that so little of student evaluation of the instructor can be explained by static course faculty and student characteristics.

Conclusions

Since the evaluation of courses and instruction is a delicate area of controversy, it is important to determine that a minimal share of the variance in student response is contingent upon static course or demographic characteristics in order to interpret the ratings with some degree of confidence. Had they been highly predictable, the results of much student opinion-based evaluation would have to be qualified by each of the significant, related demographic and course characteristics. This study suggests that they may be interpreted in a more straightforward manner. Reduced predictive power implies greater independence from nonevaluative characteristics which are outside the control of the instructor and enables more reliable input to both instructional and administrative decision making.

The issue of instrument vailidity, however, is far from settled. Eliminating some of the potential threats to validity is not equivalent to establishing that the criterion is predictable solely, or in part, by teacher effectiveness. To do this, further study and analysis of the relationship between the criterion and a host of other static and dynamic variables related to instruction would be required.

It appears that, minimally, this study has illustrated that only a rather small portion of the total variance in instructor ratings can be attributed to demographic characteristics over which instructors have little control.

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A NEW CAVEAT: LET THE BUYER BE AWARE

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In spite of the general reluctance on the part of educators to recognize or accept the academic and marketplace parallels, economic theories and concepts are finding their way into education with increasing regularity and intensity. Consumerism, the latest of the concepts from the marketplace to be applied to education, promises educators a new reckoning with theoretical and practical intrusions from the world of commerce.

Consumerism and Education

There are several reasons to believe that the age of the consumer has come to education, whether or not educators are ready and willing to accept consumerism as an operating principle. First, consumerism, the protection of the consumer from inequitable treatment by the vendor, is a cause or right many will champion and few will argue against (Arnstein, 1974). Second, the student, because of his time, energy and financial investment, has won the uncontested role of postsecondary education's primary consumer (Shulman, 1976; Willett, 1975; El-Khawas, 1975). Perhaps the most obvious reason that consumerism will become an educational as well as an economic concept, however, is the fact that consumer advocate groups and state and federal governmental agencies have already developed rules, regulations, and legislation to protect the student as a consumer (Department of Health, Education, and Welfare, 1975; Education Commission of the States, 1974; Shulman, 1976; Willett, 1975; Peterson, 1970).

While some academicians, true to their calling, will debate the definitions and others will fret over the appropriateness of a 12-month or 12,000-mile guarantee on college degrees, or recalling graduates for "defective parts" or other cynical analogies to consumerism, the real concern of educators should be in correcting the abuses which make the student a consumer in need of protection (Dykstra, 1966). The fact is that nowhere has the old caveat, let the buyer beware, been more assumed than in education. At least in business there has been the countering, if not often prevailing, attitude that the customer is always right. Unfortunately, there are now generations of educational consumers who have come to believe that the student is never right. The question is no longer whether the concepts of consumerism will apply to the relationship between the student and the postsecondary institution but rather how the student will be assured of his consumer rights.

The Basics of Consumerism

Consumerism is based on the philosophical conviction that the consumer and the vendor meet in the marketplace as equals (Willett, 1975).

Equitable treatment for the consumer is embodied in four basic areas of consumer rights, and it is the protection of these consumer rights that the consumer movement is all about (Education Commission of the States, 1974):

1. The right to safety or protection in the purchase of a good or service; including the right to hold accountable the person or organization to whom the consumer pays his money.
2. The right to choose, including the right to participate in the decision-making process which establishes the relationship with the vendor.
3. The right to be heard, which implies a system for negotiation and arbitration of disputes over the consumer-vendor relationship.
4. The right to be informed, that is, to have access to all pertinent information which might affect the consumer's decision to buy.

While each of these rights is important and has significance in the consumer movement, it is the right to be informed—full disclosure, as it is also known—that has come to be regarded as the focal point of consumer protection, probably because lack of information has been responsible for problems in consumer safety, decision making and protection (Department of Health, Education, and Welfare, 1975). It is on the premise, generally regarded as true, that consumers are best protected when they have full knowledge of their consumer rights and responsibilities that the new caveat, let the buyer be aware, is proposed for the marketplace of postsecondary education.

Full Disclosure and Postsecondary Education

Without apparent exception, all of the reports, conferences, and regulations to implement consumer protection for students include recommendations for the release to the student or prospective student of complete and accurate information about the institution which might influence the student's decision to attend or accept offers from it. With one notable exception (the work being done by the Fund for the Improvement of Postsecondary Education through its project on better information for student choice of college), the implication of the various recommendations, and the general conclusion of several investigations, has been that too little attention has been given to the information needs of the student. (Education Commission of the States, 1975; Fund for the Improvement of Postsecondary Education, 1974; Jung, 1975, Department of Health, Education, and Welfare, 1975; Willett, 1975; Education Commission of the States, 1974).

Unfortunately, most of the information now available to students is lost in the public relations rhetoric of catalogs and recruiting brochures. Other pertinent information never reaches the printed page and is released reluctantly, if at all, only upon insistent direct questioning. In fact, one gets the impression from reading most college publications that "hard data" is systematically avoided (Dykstra, 1966).

Everyone knows, of course, that decisions about where to go to college and what to study are probably

more emotional than rational. But then, given more objective information on which to base the decision, the student may be less prone to rely on subjective factors (Dykstra, 1966). In any event, the student's decision must not be based on insufficient institutional data.

Consumer and Information

There is a reverse side of the assumption that consumers are wise enough to make good decisions if they are provided with accurate information: the awareness that the complexities of today's products, and product decisions, make it vitually impossible for the average consumer to become expert enough to fully utilize the information, accurate though it may be, to protect himself in the marketplace. The inability of the consumer to interpret complex product information or to make meaningful comparisons or decisions on the basis of the information has prompted some to suggest that the government will have to assume the function of interpreter for the consumer (Education Commission of the States, 1974).

The frightening prospect of further government involvement in the reporting and interpreting of educational data, coupled with the obvious need for more meaningful educational information for the student consumer, prompts this proposal for a consumer's guide to education.

A Consumer's Guide to Education

The proposed consumer's guide to education deals only with the identification of information for the prospective student to use in evaluating programs and institutions and with the development of a reporting format that lends itself to easy analysis and interpretation by the student. The purpose of such a guide is not to rate institutions, but to facilitate institutional and program comparisons. Much of the information the guide would present is probably already collected and reported in one form or another—although probably not in one place—while other information may present some collection problems for many institutions. The illustrative material which follows, while not exhaustive, is intended to be an example of the data that could and should be reported in a straightforward manner by the institution. Particular interest is paid here to the data relating to full disclosure of academic programs and to related student, faculty, cost and resource information, areas which most often have insufficient data and are subject to misinterpretation.

Institutional identification and directory data. In addition to the current, official corporate name of the institution, the location of the main campus, and the name of the parent institution, if a branch campus, a complete chronology of critical institutional dates (for example, founding, first coursework, first degrees, name changes) should be provided to the student consumer.

Institutional control, affiliation and corporate status. Although the eight basic types of institutional control used by the U.S. Office of Education are generally recognized as being descriptive for reporting institutional control, an explanation of what control means is needed since not all states, municipalities, religious groups or corporate entities control in the same fashion. This is particularly true for private institutions where terms (affiliated, associated with, or sponsored by) which have no clear or commonly understood meaning are used to describe a college-church relationship. Proprietary schools should state all corporate relationships, parent corporations, holding companies, and so on.

Composition of governing boards. While it may be informative to have an actual listing of names of people on the governing board of the institution, it would be more helpful to have a statement of the special qualifications required for board membership, how the members of the board are selected, and what constituencies they represent. It is often possible to get a better reading on the control of an institution by knowing how its governing board is selected, than by knowing its public, private, or corporate status. Proprietary schools should list the owners and principal stockholders.

Institutional accreditation, licenses, and approval. The statement of institutional accrediation must identify which of the six regional accrediting associations has recognized the institution and the type of accreditation (full, candidate, 4-year college, junior college, provisional, regional accreditation of parent institution) awarded. Note should also be made of the highest program levels offered, specifically identifying those which have and have not been accredited or approved. Schools not covered by the accrediting associations must state the authority, licensure, or approval under which they offer educational programs.

Institutional purpose, objectives, goals. The statement of institutional purpose, objectives, or goals should be clearly stated and easily understood. It is recommended that the statement be made in a style easily translated into specific outcomes. After reading the statement of goals, the student should be fairly certain what he can expect to do as a result of the educational experience.

Institutional evaluation. Institutions should state the methods and procedures they will use to determine whether or not the stated institutional purpose, objectives or goals are being met. Because the methods and procedures of evaluation obviously have to be tied to the stated purpose, objectives and goals, the previous suggestion of behaviorally stated outcomes was made.

In addition to institutional self-evaluations, educational audits or evaluations by outside groups (including accrediting reports) should also be available to the student.

In one form or another, the institution should state how well it is performing its mission and how that performance has been determined.

Requirements and qualifications of faculty and administration. An indication of the ability of the faculty and administration to accomplish the objectives of the institution is an important aspect of institutional evaluation. If specific requirements and qualifications other than those usually expected for an academic appointment (such as church affiliation) are required of faculty or administrators, they should be stated. Statistical data summarizing the qualifications needed for faculty and adminstrators to accomplish the stated institutional goals should be reported. In most cases, the summary should include the highest earned degrees of the faculty.

Other faculty data. Statistical tabulations of faculty and administration data should include the number of faculty by rank and function, length of service at the institution, age distribution, tenure status, sex and race. It is assumed that a complete listing of faculty, including

their qualifications and responsibilities, will be available to the student, although probably in another document.

Curriculum and program data. The consumer's guide to education is not intended to replace the college catalog as a source listing of courses and course descriptions or the detail of major and institutional requirements for degrees. There is an obvious need, however, to make the information in the catalog closer to reality; the resemblance between course description and course content is too often only coincidental. The courses listed in the catalog should include only those that have been taught in the last several years or have an honest chance of being taught in the near future.

The guide would include a statement of the type of calendar (quarter, semester, 4-1-4, trimester) and the approximate inclusive dates of each term. Semesters, for instance, can be quite different in concept depending upon when they start and end. Information on majors and academic programs should include (a) the type of professional accreditation held, if any (in addition to regional accreditation), (b) the number of courses offered in the major area and the number of those courses taught during the last year, (c) the total number of faculty qualified in the area and the full-time equivalent faculty teaching in the major during the past year, (d) the degrees awarded or certification offered for completion of the major or program, (e) the number of hours or courses required in the major for completion, and (f) the average number of years or terms, needed to complete the program or degree in the chosen major field.

Information on each major and academic program should also include the number of declared majors, the number of persons who have recently graduated or completed the program, the basic ability levels, the grade point averages of students, and averages on so-called exit tests.

Student data. Some important student data has already been described in the section on curriculum and major programs, but more information on student characteristics clearly needs to be provided. Strange as it may seem, student information other than raw totals or averages is generally not available. The following additional data should be provided.

Enrollment: Enrollment by sex, race, age, full- or part-time classification, matriculation status, residence, and class should be provided for the more recent fall enrollment period.

Socioeconomic characteristics: Descriptive data on the socioeconomic background of the student body (which is generally available from ACE, ACT or SAT summaries on entering students) should be reported to prospective students.

Admissions requirements: All of the requirements and considerations for admission should be clearly stated, including the dates and deadlines for application and acceptance. The amount and nature of any fees or deposits, and refund or waiver policies should be clearly stated.

Ability levels of entering freshmen: Frequency distributions of the admission test scores, high school grade point averages, or other ability measures or indices should be presented along with the mean and median scores for entering freshmen. If regional, national, or similar institution averages are available, they should be reported as well.

Predicted student success: First quarter predicted grade point averages are frequently used in the admissions process. When they are, the prediction equation should be made available to the student. In addition, it would be possible to prepare a chart which would allow an easy approximation of the predicted grade point average for the prospective student.

Student achievement: Grade distributions by class, major, or department, and student class rank by grade point average, is information that could give the prospective student a notion of student attainment and institutional expectation. Simple distributions of such data should be provided.

Student retention/persistence: Data on the number of students who start and complete programs at the institution, along with figures on the number who enroll from previous quarters, should be available in the guide. In addition, reported reasons for leaving the college should be provided.

Ability levels of those who have completed programs: Frequency distributions of the same ability criteria used in admissions, and reported for entering freshmen, should be made for the students who have successfully completed their programs or degrees. The student's scores obviously won't change, but the difference in the distribution scores for entering and exiting students can be revealing.

Measures of graduates' achievement: Senior comprehensives and exit exams of various types are coming back into vogue as the issues of program and institutional evaluation and accountability become more important. The institution needs to state the methods and procedures it uses in evaluating the programs it offers and report the results of its evaluation, including the scores of its graduates on various nationally normed tests by program, major, or degree.

Where appropriate, success rates on bar exams, medical boards, licensure tests, graduate and professional school admissions exams, and other such tests should be reported.

Placement and alumni data: Closely related to the data on the achievement of students completing programs is the information about what graduates do after college. Proprietary schools face more demands for job-related information about their graduates than do colleges or universities, but the demand for such information is increasing for all postsecondary institutions. This information should reflect those graduates who have positions, those who have positions in their field of study, those who do not have positions, those who do not have but are looking for positions, those who are not looking, and those who intend to make a career of their present work. Information relating their college work to their employment should also be included.

Tuition, fees and costs: In view of the fact that most institutions are seeking more than a one-year commitment from the student, it would seem only reasonable for the institution to project the anticipated cost to the student over the entire length of the program. Obviously, tuition and fees will be subject to change, but such changes are not as unexpected or unplanned as most institutions would have students believe. (If increases are unplanned or unexpected, that says something about the quality of financial planning at that institution.) Guaranteed tuition plans are all but gone now, but a projection of anticipated costs over a

two- or four-year period need not be a cost guarantee, nor a commitment to single levels of cost over the period projected. What is needed is an indication of what the cost increases are likely to be. Those cost projections are or should be a part of the planning of all institutions.

In addition to the tuition, activity fees, deposits, and so on that are required of all students, any special fees associated with a given program (music, uniforms, laboratory, etc.) must all be listed. Since the special fees are often buried in the catalog, all cost data in the guide would be reported together.

In those cases where the student is required to room or board in institutional housing, special note should be made to enable the student to include that cost in his planning.

Estimates of costs of books and supplies and any personal living expenses should be provided, based on the averages for currently enrolled students. Such data is used in determining financial aid at most institutions and should be reported.

Institutional finance: A complete, current audit report of the institution should be available for examination even though most students don't need that much information to get a feel for its solvency. In addition to a balance sheet, all students should receive a statement showing dollar amounts and percentages for each of the typical revenue and expense classifications. Particular emphasis needs to be placed on the percentage of revenue generated by tuition and the percentages of expenses going toward instruction. Someday, perhaps, auditors' statements (and accreditation reports) will report not only that the books and records and kept according to accepted standards but will also report specifically on the financial position of the institution.

Student rules and regulations. Although it may not be necessary to give details on such matters as dorm house rules, specific rules and regulations affecting the student's rights to continue his enrollment should be clearly stated. It is also important that the methods and procedures for establishing student rules and regulations be spelled out in detail and that the student be informed of the procedures for being found guilty of breaking them—the consequences of such a verdict, and the appeal procedures.

Conclusion

More likely than not, this first attempt at a consumer's guide to education is a bit like a twelve year old's first reading of a book that is supposed to contain everything about sex. It's more than the child wanted to know, even if he or she knew what to ask in the first place. The point is that, as educators and researchers, we have known more about education and institutions and how students mix with both than we have told them or than they have asked. We need to find a way to get that knowledge to students without turning them to total abstinence or complete promiscuity.

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EXCELLENCE AND EQUALITY, A STUDY OF ACCESS AND DROP-OUT: THE EXPERIENCE OF THE OPEN UNIVERSITY OF THE UNITED KINGDOM

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Given the limited resources for education, should we be pursuing excellence or equality of access and provision? Undoubtedly, the pursuit of either goal at the expense of the other would create problems as well as benefits for society. However, the Open University (OU) represents a new attempt to solve this dilemma, at least in the field of adult higher education, by effectively claiming that no such dilemma exists. We can have excellence *and* equality.

The philosophy of the Open University is based on these arguments:

1. There are many thousands of people, often early casualties of our elitist educational system, who are fully capable of degree-level education.
2. By using a multimedia distance teaching system, many persons can be educated to degree level in an extremely cost-effective manner.
3. Everyone is entitled access to as much education as he or she desires.

Such beliefs are fine in theory, but how do they work in practice? Now in its fifth year of operation, OU can now begin to be judged by its results rather than its intentions. In this paper, we examine the extent to which OU has achieved its three aims: equality of access, excellence, and cost-effectiveness.

Equality of Access

In a formal sense, OU is completely open. No educational qualifications are required for entry, and places are offered on a first-come, first-served basis. However, it is not open in any real sense to a person who does not know that OU exists, nor to one who thinks *A* levels are required. Nor is it truly open if a person has the facts but considers the courses uninteresting, too difficult, too expensive or undesirable for some other reason.

For many people, true openness would be achieved if the student population of OU mirrored the United Kingdom (U.K.) adult population with regard to certain key characteristics such as sex, occupation, and terminal age of education. We begin our analysis by looking at the relevant figures in the early years of OU for three important groups: women, those with little education, and the working class.

Equality of representation was not achieved in the case of women. In 1971, women formed 52 percent of the population of the United Kingdom but only 43 percent of those who had heard of OU and 33 percent of those who became students. However, once they had applied, their rate of progress toward final registration as students was the same as that for men.

However, the inequality was much greater for persons with a terminal age of education of 15 or under. People in this group formed 75 percent of the population but only 54 percent of those who had heard of OU and a mere 14 percent of provisionally registered students.

To get a handle on the working class group, we also considered men in manual occupations (women have been excluded because the Registrar General's categories used by OU are too inclusive to distinguish the large numbers of women who are in non-manual, but nevertheless, working-class jobs). The pattern found was very similar to the one for those with a low terminal age of education. Men in manual occupations formed 61 percent of all male workers, 35 percent of those who had heard of OU and 9 percent of registered students.

Clearly OU had not achieved true openness "at a stroke," and probably only the most naive idealist had expected such a result. However, a somewhat closer look at the apparently middle-class nature of the student population is worthwhile. In fact, OU students only appear to be predominantly middle-class when the present occupations of students are used to derive their social class. Using their fathers' occupations at the time the students left school, a very different picture emerges.

In 1971, 29 percent of the students entering conventional universities had fathers in manual occupations, whereas the corresponding figure for OU students was 52 percent. Even allowing for the decline in manual occupations between 1951 (the modal school-leaving year for OU) and 1971, OU still shows a marked improvement over conventional universities. Preliminary figures for the 1975 intake of OU students suggest that, once more, 52 percent have fathers in manual occupations. Taking into account that these students left school more recently and that the numbers of workers in manual occupations has continued to decline, this figure may even indicate a relative increase in the proportion of OU students coming from working-class backgrounds.

Many OU students have been upwardly mobile. It is clear that teaching has provided the main route for this mobility and also that many went into teaching late, having started work in a different field. This upward mobility has undoubtedly been enhanced by increased opportunities in secondary and postsecondary institutions.

Level of awareness in the various social groups is obviously an important factor affecting accessibility.

Note: The present version of this paper is highly condensed. A full report containing data presentation is available from the senior author at The Open University.

Awareness level, defined as the percentage who said they had heard of OU, has increased across the board since 1971, but differentials, although decreasing in size, still clearly exist. Much higher percentages of upper class groups than lower class groups had heard of the Open University. As it is likely that awareness among the upper classes has effectively reached the saturation point, such differentials should continue to diminish in future years.

In 1975, women constituted 42 percent of the new intake, as opposed to 26 percent in 1971. There was a similar increase, from 29 to 43 percent, for those not possessing formal university entrance qualifications. Manual workers comprised 9 percent of the new male students in 1972 and 14 percent in 1975. The percentage of female workers in clerical-and-office and sales-and-service occupations rose from 21 to 30 percent over the same period.

Progress has been made. However, members of certain social groups are still less likely to become OU students even if they are aware of its existence. In trying to explain these differences, we can draw on the results from a number of surveys.

One reason why people may not apply, even though they have heard of OU, is lack of accurate knowledge of what OU is and what it offers. Although this appears to affect, about equally, the decisions of men and women, those persons with a low terminal age of education and from the working classes are much more likely to have incorrect information about OU. The overall level of knowledge has risen only slightly, and the differentials remained much the same between 1971 and 1974.

Who are the people who come very close to applying to OU but finally decide against it? As one might expect, women are over-represented in this group, as are those with a terminal educational age of 15 or under. In occupational terms, manual workers and housewives are over-represented, while teachers and technical personnel are under-represented.

What reasons do they give for deciding not to apply? The most important ones seem to be inability to attend summer school, too great a financial commitment, lack of courses in subjects of interest, inability to specialize, and length of time required to obtain a degree.

Housewives clearly have three major problems: cost, summer school attendance, and the care of their children. Compared with teachers, manual workers were much more likely to mention cost, summer school attendance, difficulty of the courses, and difficulties associated with their type of work. A very similar pattern emerges when we compare those with high and low terminal ages of education.

Conclusions about Openness

Although progress has been made, OU is still far from being truly open. At every stage—from actually hearing of OU to accepting an offer of a place—barriers exist which discriminate against particular types of people, many of whom have been deprived of educational opportunities in the past.

The data analyzed for this paper show clearly that the main problem lies in the pre-application period. An important task before the university is that of ensuring that more people from the educationally deprived groups know about the opportunities that OU offers. Up to now, there has been little money to spend on publicity. Therefore, OU has relied, to a large extent, on free publicity through articles in the quality press, on OU students spreading the word, and on OU broadcasts being picked up by non-students. However, none of these is likely to be an effective means for reaching the educationally deprived groups, and more positive steps must be taken.

Although awareness and accurate knowledge of OU are essential, they are not sufficient to attract applicants from such groups. Before they will apply, such people have to feel that OU courses are interesting, worthwhile and, above all, within their capabilities.

Irrespective of the academic level of its courses, certain features of the teaching system at the Open University will continue to be a disadvantage to prospective applicants from the educationally deprived groups. Note the following:

1. Students taking each foundation course must attend a one-week summer school. For manual workers, this will generally mean having to sacrifice one of their two or three weeks annual holiday. Attendance is also especially difficult for women with young children.

2. To obtain an ordinary degree, six credits are needed, but students can be awarded up to three credit exemptions for previous higher education experience. The majority of manual workers, and all of those without experience of higher education, receive no credit exemptions. As most of these can cope only with studying for one credit each year, it will take them at least six years to obtain a degree. Many others, on the other hand, may graduate in two or three years.

3. Generally, local authorities pay only the student's summer school fees. The expense of such items as course tuition fees, required books, and travel to study centres must be met by the student. This is a greater problem for those in manual and routine non-manual occupations who may earn less and whose employers are less likely to sponsor them or give them paid leave. Many people who might study out of interest, rather than to further career prospects, feel guilty about using the family income for a "selfish indulgence." This is especially true for housewives who are currently without an income of their own. An increase in fees in 1976 is likely to exacerbate this problem.

4. For a good home-study environment, the student requires expensive television and radio units and a quiet place to study. Those with low incomes are less likely to have, or be able to afford, the necessary receivers, and they are also less likely to have a room that can be set aside for their studies.

5. For those with a limited education, correspondence study, with its reliance on a high degree of literacy, is probably the most arduous and least accessible method for making up the deficiency.

6. Being largely non-vocational, OU courses offer little short-term prospect of advancement compared with courses in more vocationally oriented programs.

The Cost of OU

It is less expensive to teach degree students by OU methods than by means used at conventional universities. Exactly how much cheaper is a complex question, even for economists. Interested parties are referred to two papers on the subject whose main findings follow.

Wagner (1972) calculated a number of comparative cost figures for the Open University and conventional universities and found substantially lower costs at OU in all categories of analysis.

Laidlaw and Layard (1974) concerned themselves with each individual OU course. With one exception, they found that the variable cost per student-course was lower at OU than elsewhere. For them, this constituted a strong case for the use of existing OU packages in campus universities and for the expansion of existing courses at OU.

These encouraging verdicts need to be qualified in the light of certain developments. Two factors, in particular, may make OU less cost-effective in future years than it was in its early days. First, the "throughput" of students is declining (that is, students are now taking fewer credits per head per year). Fewer students are willing, or able, to fit in with their normal working lives the 20-plus hours of study necessary for two courses. As OU attracts more students with no experience of higher education and with physically demanding jobs, this trend is likely to continue. Therefore, in this one respect at least, greater openness can lead to a decline in cost-effectiveness.

The second factor concerns individual courses. In moving towards its 1984 goal of 137 courses (equivalent to 87 full credits), OU is now producing more high-level courses, many of which will inevitably be taken by fewer students in a given year. It is estimated that in 1977 there will be 39 OU courses operating with less than 400 students enrolled in each. Therefore, by providing a wider variety of courses, OU will be enabling its students to have a wider choice, but it will be reducing its own cost-effectiveness. Despite this, although many individual courses will not be cost-effective when judged by Laidlaw and Layard's methods, the overall degree will clearly remain so. This is the most significant fact. The additional unquantified financial benefit which arises from the increasing use of OU materials in other institutions is also worth noting.

The Achievement of Excellence

How does an education at the Open University compare with that obtained at a conventional university? In an attempt to judge OU in academic terms, we will examine how OU teaches, what it teaches, and how the students fare.

The teaching methods. Courses are taught from a distance and utilize a variety of teaching media. Being in the business of mass higher education, OU uses the mass media to aid it. The use of innovative forms in education, in particular the media, is often associated with radical attempts to increase access. The recipients of these attempts are frequently educationally disadvantaged persons who are required to learn in new, untried, and often difficult ways.

The use of the media is also often associated with the attempt to save money, but, since its use is not cheap, cost is reduced only when media is used for large numbers of persons, as is the case with OU. Inevitably, the use of the mass media means, at some levels, that content is standardized, and a mass product results. The more students there are, however, the more difficult it is for standardized content to meet the individual differences and levels of need of all students. Conventional universities, with a relatively homogeneous intake of students of similar ages and abilities, could, theoretically, manage with a mass product better than OU can.

OU has been criticized for reducing the educational experience received by its students through the combined use of independent learning and highly structured materials. However, although its basis is independent learning, there are a variety of other contexts, including tutorials, counselling sessions, self-help groups, summer schools, and so on, which can and do enrich the OU learning experience. The intense experience of three years of campus life is not offered at OU, but, for the majority of its students, such an experience would probably be inappropriate and inaccessible, given their occupational and family commitments.

The criticism implies that there is a *levelling down* of experience. Such a levelling is indeed likely, partly because of the need for academic certification, which has to be nationally recognized and acceptable. This does not necessarily mean, however, that the levelling is downwards. Clearly, in some ways, it has been a levelling up!

It has also been shown that teaching methods at OU have made some improvements over conventional methods. The courses themselves are designed by teams of academics, television and radio producers, and educational technologists, specifically for independent learning, and the materials reach the students only after much discussion and redrafting. After a life of about five years, each course is remade, drawing on feedback which has been collected from students and staff. Television and radio are not used just to bring "chalk-and-talk" lectures to the students as a change from the written word.

Independent learning is often confused with individualized learning. OU has been set up for independent learning. Its content, as we have noted, cannot be easily individualized. What can be individualized, however, is the pattern of students' study: how they choose to use the wide variety of learning components available to them, how long they spend over their studies and over what period of time, as well as what pattern of subjects they choose to build up to a degree. It can, in a real sense, be individualized, but only at a macro level.

Many who criticize OU might contrast it to the individualized-learning-contract system developed by Empire State University or the University Without Walls. These institutions, although having similar objectives to those at the Open University, have adopted a very different strategy: The tutor negotiates a work programme with each individual student in a way not dissimilar to that used at Oxford or Cambridge. This flexibility gives an advantage to the educationally deprived adult, but the system is heavily labour intensive and, therefore, not cheap.

It is interesting to speculate as to whether society would have permitted the OU to exist, and extend educational opportunity on such a scale, if it was not clear that it would also be doing it cost-effectively. Certainly, the money would not have been found to provide bricks-and-mortar places for more than 50,000 adult students. If the argument about the reduction of the educational experience is valid, then one could either suggest that the opportunities be withdrawn because they are not good enough, or that it is better

to have something than to have nothing. If the cost increases too much, however, and comes nearer to that of conventional universities, then, in a time of scarce resources, the political will for this area of activity may not continue.

The courses. Traditionally, there have been two main alternative approaches to maintaining standards, either-or:

Either select the elite first, safely assuming that the majority will pass, making formal assessment within or at the end of the course less important and possibly experimental

Or allow open admission knowing that anyone may start to study, but many will not finish, because of a high drop-out or a high fail rate.

Much of the current scepticism about educational innovation in America stems from attempts to be innovative in everything at the same time. It is most dangerous to risk standards.

It was always intended that OU should offer general rather than specialist degrees. This was a realistic decision, as many hundreds of courses would have had to be offered if the majority of students were to be able to make up their own desired specialist degrees. Even though there will be 137 different courses by 1984, the choices that this curriculum will offer are not considered wide enough by many academics and students.

It is difficult to measure how good OU courses are, but we can look for pointers in certain areas. First, several institutions of higher education are admitting former OU students on the basis of their OU credits. Second, some institutions are beginning to use OU course materials for their own students. The actual amount varies, from individual course units, or readers, to complete courses. Third, the OU degree is increasingly recognized by employers as a valid qualification. Information is very fragmentary at this stage, consisting largely of precedents created by individual students. The attitudes of the various employers need to be systematically surveyed in the future, as do the experiences of OU graduates.

The Success and Failure of OU students

The nature of the credit system at the Open University creates many problems for researchers when they try to examine success rates. However, this is dealt with in detail elsewhere, and here we content ourselves with a few overall statistics.

In the first year, new students register provisionally for foundation courses for what amounts to a trial period. If they decide to continue, they pay the final registration fee and, at that point, become full OU students who can leave and rejoin OU at will in future years. Each year, about 75 percent of the provisionally registered students decide to finally register, and finally registered, they generally succeed with their first year of studies. In 1974, some 80 percent were awarded at least one credit at the end of the year. In subsequent years of study, course success rates remain fairly high. In 1974, these stood at around 70 percent on average for all courses that year. The students themselves show great persistence; over half the students who finally registered in 1971 were still studying at the beginning of 1974. The following intakes show a similar staying power.

By the end of 1974, OU had produced 9,559 graduates, and a third of the first intake had already obtained degrees. However, the data also show a decline in "through-put", with a smaller proportion of the 1972 intake graduating in two years.

In general, then, the success rate of OU students seems fairly satisfactory. To the extent that comparisons can be made, the figures are lower than for conventional universities in the U.K. but not very much different from state universities with open admission in America. However, if OU is aiming for excellence and equality it must direct its attention away from considerations of overall performance rates and towards the performance of those from the lower occupational groups and those with low educational qualifications.

The results of various analyses suggest that, although OU is attracting relatively more students with manual occupations and lower educational qualifications, they are now doing relatively worse in their first year of studies. Their progress on future courses, as well as the performance of subsequent intakes, must be carefully monitored to see whether this apparent trend is real. Significant numbers of such people do succeed at OU, but it is clearly more difficult for them to do so. There appears to be a danger that OU's open door will become a revolving door that rapidly deposits many disadvantaged students back on the pavement.

Conclusion

We have tried to show that OU has achieved a fairly high standard of excellence on a cost-effective basis, and that it is also moving slowly towards greater equality. However, there are already signs that improvements in any one area can be made only at the expense of the other two:

1. Greater equality: The progress made by OU students from educationally deprived groups suggests that, in the absence of additional support both from within and without the university, as more of these students are encouraged to register, there will be a decline in through-put and an increase in drop-outs. Cost-effectiveness and excellence, as measured by success rate, will decline. If more face-to-face tuition is provided, or alternative versions of courses are offered, this will increase the costs.

2. Greater cost-effectiveness: Costs could be lowered by cutting down on more expensive ingredients such as broadcasts or tutorial provision, but this action would reduce the quality of the courses and probably increase the drop-out rate. Cost-effectiveness could be raised only by admitting those students with a high probability of success, but this would be against the open admissions policy. Similarly, rules requiring a minimum course load per year or a time limit for graduation would be unacceptable to the university.

3. Greater excellence: In offering more specialized courses, OU would become less cost-effective, with fewer students per course. If it raised the standards of all its courses, this would produce higher drop-out rates, making OU less open and less cost-effective.

Given the interrelated nature of the problem, the Open University obviously must decide upon priorities. If, as many people believe, OU should now be aiming for equality, then more money must be spent on publicity. However, unless a higher drop-out rate is to be tolerated, greater publicity must be accompanied by course revisions. Such revisions might include redesigned foundation courses with lower entrance levels, the

abolition of compulsory summer schools, the ability to spread one course over two or more years, specially designed preparatory courses, and so on.

OU is not likely to be the sole solution to the problem of undereducated adults. That we are expecting disadvantaged students to learn independently remains a basic irony. Coming as they do from a variety of backgrounds and with a variety of needs, such students would benefit most from classroom discussion that could be most easily adapted to their needs. Conventional universities, with a relatively homogeneous intake of students of similar ages and abilities, could theoretically manage with a mass product better than OU can. In an ideal world, we would perhaps see greater use of OU materials on campus, thereby releasing teaching staff for more face-to-face contact where it is most needed.

The Open University has made a promising start. With around 50,000 students every year, it has shown that higher education can be conducted cheaply and effectively by teaching at a distance using multimedia. However, although it has provided a successful route to a degree for a number of people who possess no educational qualifications and who work in manual occupations, progress towards greater openness has been slow. To a great extent, this seems to be due to certain features of OU's teaching system, some aspects of which are inherent and others that could be altered. Unless OU is to remain as an isolated token gesture towards equality of access, improvements must be made. This may require drastic changes in the OU system, as in the suggestion that it should become a central resource depot to service community-based educational schemes. On a more moderate level, it might require the provision of lower-level courses, either through an extension of OU or by the creation of an Open College with a higher proportion of face-to-face teaching contact. OU has already shown that the new media have a lot to offer. We must now learn how and where we can best put them to use.

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DIRECTIONS OF HIGHER EDUCATION TOWARD CAREERS

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Vocationalism Versus Liberal Arts or General Education

Following the rapidly increasing enrollments, unquestioning acceptance, and abundant funding of higher education in the 60s, the leveling enrollments and demands for accountability of the 70s have given rise to much speculation about the future of higher education in America. One major trend that appears to be evolving is a greater emphasis on the goal of preparing the student for employment. And controversy between the vocationalists and generalists has begun.

Vocationalists are highly critical of liberal arts preparation on the basis that today's students are most immediately concerned with gaining usable skills for entrance to the work force rather than with obtaining a broad intellectual background. Generalists upbraid vocationalists for promoting mere training for work which may quickly become obsolete instead of education for a career with a future. What does seem to be universally agreed upon is that changing expectations, changing composition of student bodies, changing manpower needs of society, and changing technology require that our postsecondary educational system be carefully reviewed and improved in response to current and future needs.

In the past, with an oversupply of students seeking entrance to our institutions of higher education, institutional survival was not dependent upon fulfilling their every desire and expectation. Now, however, a dropping birth rate and leveling college enrollments indicate that institutional competition for students will intensify over the next decade. A number of sources, including the Carnegie Commission (1973a, pp. 65-66) and the American Council on Education (ACE)/UCLA Cooperative Institutional Research Program (1973), have identified trends in enrollment patterns detrimentally affecting traditional college attendance. There has been an accelerated shift from traditional academic programs into all types of vocational programs in four-year colleges and universities, in community colleges, in apprenticeship programs, and so on.

This evidence was reinforced by a comparative study of enrollment shifts and trends among college majors at West Virginia University (WVU) conducted in the fall of 1975 (Knierim, 1975a). A look at the academic majors of first-time freshmen in the falls of 1972 through 1975 indicates a trend in interests toward more vocationally oriented programs, a trend which has also been documented nationally by a College Entrance Examination Board (CEEB) survey (*Fields of Study*, 9/15/75, p. 19). Table 1 shows this trend in detail. At WVU over the past four years, the numbers and percentages of first-time freshmen have increased most in the areas of agriculture and forestry, business and economics, and engineering. The CEEB study showed the highest percentages of 1975 national high school graduates intended to major in the areas of health sciences, business and economics, education, engineering, and biology.

In another WVU study in June 1975, a survey was made of undergraduate students who were accepted at the university but did not enroll, in order to determine their reasons (Knierim, 1975b). Fourteen percent of these people cited specific reasons related to vocational interests, such as difficulty in gaining acceptance in desired vocational programs, preference for a vocational school or one which had cooperative education programs or desirous of work experience. Another 21 percent cited reasons related to the curriculum of the university, such as a program of interest to them not being offered, bringing to 35 percent the total of those surveyed who did not enroll at WVU for potentially vocational reasons.

These trends obviously have great significance. In order to survive, our higher education system must strive for relevance in the eyes of the students, the government, and employers, upon all of whom it is financially dependent. In the eyes of the government, vocationalism definitely appears to be a relevant goal for higher education. Specifically, the Office of Education is encouraging vocational-oriented education, as are state governments. Although this emphasis and accompanying funding has thus far been aimed primarily at elementary and secondary schools, the clear implication is that the government supports career preparation as a goal for all levels of education. The changes that increased emphasis on vocationally oriented education may bring, even at the elementary and secondary levels, will have important implications for the universities. As more high school graduates have specific vocational objectives, universities will have to change to meet the needs of this new type of student.

There is another trend in federal funding that indirectly increases support of vocationalism in higher education—that of reduced funding for categorical programs which aid institutions and more financial aid to the students so that they may attend institutions of their choice. The federal student-aid programs provide assistance even if the students attend proprietary, trade, or technical schools. This radical departure from past federal policy will undoubtedly add to the redistribution of students away from liberal arts programs in colleges and universities.

Business and industry, too, seem to be leaning toward vocationalism. In the spring of 1974, James and Decker discussed a study done to determine business personnel officers' perception of "ideal" courses of study for college recruits (1974, pp. 26-30). The majority of the respondents said their companies were more interested in the business major that the liberal arts major. The College Placement Council found similar results in a May 1974 survey of almost 2,000 employers (1975, p. 9). It was found, overall, that liberal arts hiring had decreased in the previous five years. During the 1973-74 college year, 32 percent reported hiring no liberal arts graduates, compared with 24 percent five

Table 1

Number and Percentages of Total First-time Freshmen at West Virginia University and in the Nation by Major Field Area

	West Virginia University								In the nation[a]
	1972-73		1973-74		1974-75		1975-76		1975
	%	No.	%	No.	%	No.	%	No.	
Agriculture and forestry	9.0	254	10.0	320	11.0	354	13.0	439	4.0
Arts and sciences	38.0	1,113	35.0	1,116	35.0	1,164	37.0	1,289	
Biology	9.0	255	10.0	323	8.0	259	7.0	229	7.0
Chemistry	1.0	43	2.0	58	2.0	51	1.0	51	.5
English	1.0	19	.2	8	.5	17	.2	6	2.0
Foreign languages	1.0	22	.4	12	.5	18	.2	6	1.0
Geology	.3	10	.2	8	.4	12	.3	9	.5
History	.1	3	.5	17	1.0	19	.3	11	1.0
Mathematics	1.0	34	1.0	32	1.0	26	.4	14	2.0
Physics	.2	6	.2	6	.4	15	.2	7	.4
Political science	1.0	26	2.0	56	3.0	86	2.0	61	2.0
Psychology and philosophy	2.0	45	2.0	49	2.0	73	2.0	52	4.0
Speech	1.0	16	.2	6	.1	4	.1	4	.1
Statistics and computer scienc			1.0	20	1.0	29	1.0	39	2.0
Other			16.0	521	17.0	555	23.0	800	16.0
Education	7.0	191	7.0	227	5.0	172	3.0	120	10.0
Family resources	2.0	57	2.0	72	2.0	81	1.0	39	1.0
Social work	2.0	48	1.0	37	2.0	62	1.0	35	1.0
Journalism	3.0	99	4.0	125	4.0	117	3.0	109	3.0
Business and economics	8.0	231	9.0	288	9.0	301	10.0	345	12.0
Creative arts	6.0	172	6.0	189	6.0	189	5.0	184	7.0
Health science	18.0	517	18.0	574	16.0	516	14.0	471	16.0
Engineering	8.0	178	8.0	216	10.0	271	12.0	298	7.0
Totals	100.0	2,900	100.0	3,203	100.0	3,283	100.0	3,446	

[a]Approximate percentages of 607,819 students who were graduated from high school in 1975 by intended field of study in college. The data were gathered by the College Entrance Examination Board from students who took the Scholastic Aptitude Test in 1974-75 and were reported in the "Fact-File" section of *The Chronicle of Higher Education*, September 15, 1975, p. 19.

years earlier.

In spite of the conflict which continues to exist over whether liberal arts or vocational education is most appropriate for administrative positions, there is no question that we are living in an increasingly technological society. Not everyone can reach the executive and management levels, regardless of how accessible higher education is made; skill training must be done somewhere—either on the job or in the institutions. A number of prominent figures in the business world currently favor the incorporation of more such training in our institutions (Besse, 1974, p. 171).

In addition to present student, government, and business world enthusiasm for vocationalism, some leading academicians are among its advocates. In an article in *Change*, Earl McGrath quoted Carl Kaysen, of the Institute for Advanced Studies in Princeton, as saying that college is ". . . primarily training in a profession. This should become the norm; it need not be the universal practice any more than liberal education is now" (1974b, p. 25). There are many similar statements of support for vocationalism (Millard, 1972).

This vocational or economic theme for higher education is not a new one. The Carnegie Commission on Higher Education has commented that the economic purpose of higher education was principally developed in the late nineteenth century after more and more occupations began to draw on the theoretical base which universities could supply and thus began evolving as professions. This economic purpose increased its momentum during and after World War II with emphasis upon research and development and upon preparing highly trained manpower (1973b, pp. 60-61). Nonetheless, this economic theme has been only one of several themes in higher education, others being personal development, service to society, and so on. During the 50s and 60s, liberal arts were emphasized as the best means of achieving these goals.

Why, now, are people so disenchanted with the emphasis on liberal arts in higher education? There are many reasons. The most obvious and most often cited is the current difficulty liberal arts graduates are having finding satisfying employment. Marland identified this problem in his book, *Career Education*.

> The crunch for the college graduate has come from both ends—diminishing job prospects for the college graduate and a growing number of students completing college. By 1980, for example, there will be nearly 650,000 more students awarded BA's than there were in 1960. And this will occur during a period when 80 percent of the new jobs available in the 1970's will require training and skills, but not necessarily a four-year degree. The new technologies and service industries have created a new middle ground of job opportunities that require two years of training beyond high school but do not require a four-year college degree. (1974, pp. 78-79)

Another, perhaps equal reason for the disenchantment with our present system of higher education is the changing composition of the student population. The increasing accessibility of higher education has enabled more students from minority groups and disadvantaged classes to penetrate the system. Students from a disadvantaged background seem to prefer educational programs that appear to promise tangible career benefits rather than those emphasizing personal development or knowledge for its own sake (Hitchcock, 1973, p. 48).

Students are not alone in their disenchantment with the present educational system. The faculty themselves are unsure of the worth of what they are teaching. Currently, there seems to be a lack of conviction to challenge the trend toward vocationalism. Nonetheless, faculty rarely attribute high priority to vocational preparation as a goal of higher education. Perhaps they fear for their futures. The University of Houston, in doing an Inventory of Institutional Goals, found that faculty attached significantly less importance to the goal of vocational preparation than did students, administrators, or alumni (1974, p. 11).

In spite of all the criticism and doubt about the utility of the liberal arts degree, even the most adamant vocationalists are hesitant to suggest its complete abandonment. The argument of the necessity for our higher education institutions to "educate" rather than "train" students for the betterment of society is heard over and over again. The proponents of liberal arts argue that, given the current situation of rapidly advancing technology and ever-expanding bodies of knowledge, the educational system must teach creativity and adaptability rather than skills that may soon not be needed. Men such as Albert Einstein, Abraham Maslow, Abraham Kaplan, Lewis Mumford, Alvin Toffler, and Woodrow Wilson are only a few of the great men who have argued through the years for general education (Truman, 1974, p. 24).

James G. Harlow, president of WVU, has stated well the need for broad, general education as a primary goal, though not disclaiming the need for vocational education:

> The concern of society that public education "pay off," that it return benefits proportionate to the large tax investment, is a completely proper concern . . . .
>
> However, I think we will also agree that a high level of technical training and competence can be only a necessary but *not sufficient* condition for the survival of our graduates in the world and indeed for the survival of the world itself. The demand that society makes upon the university for highly trained individuals is a reflection of a high rate of technological change occurring in society. You are well aware that the rate of change is so rapid as to make a narrow vocational program a short cut to obsolescence. I believe it is necessary for the university to *educate for the future* rather than to *train for the present.* Education is essentially an investment in people for which it is not always easy to account within a single fiscal year. (1974, pp. 8-9)

The critics of vocationalism contend that most entry-level positions do not require specialized skills—that such skills can be gained on the job—and that a broad liberal education is less confining and increases the student's ability to assimilate new ideas and skills. Beyond the value of learning to think, advocates of liberal arts profess the necessity of value considerations for preparation for effective living today.

Perhaps much of the disenchantment with general education or the liberal arts curriculum is not with the ideals of such an education but with the present shortcomings of liberal arts and general education programs.

It is highly questionable whether the general education movement of the 60s unified knowledge and encouraged the development of the thought processes as it was hoped it would do. A sizeable amount of higher education instruction is supposed to train people in the use of concepts and in problem-solving skills, goals often not achieved. Probably much instruction in the traditional liberal arts disciplines is no more demanding of the higher mental processes, and no less dependent on rote learning, than occupation-related instruction.

Another criticism of current general education is that faculty members are often such specialists that they are unable to offer students the ingredients of a broad liberal education. Rather, they tend to teach specialization in their particular areas.

> Courses purportedly designed to enlarge the intellectual skills of the student and to encourage new perspectives often become effective barriers to independent thought. In addition to failing to contribute to the students' intellectual development these courses also reinforce in his mind the value placed on specialized thought and the importance of developing some specialized skills of his own. (Korn, 1968, pp. 234-235)

Vocationalism and Liberal Arts or General Education

The discussion raises a question as to whether it is feasible to maintain the ideals of liberal arts education while incorporating practical career preparation curricula into the system. A number of means toward achieving such a merger have been suggested:

1. Improved career guidance programs have been one often-cited means of meshing the goals of liberal education and career preparation. Lester Hale, at the University of Florida, has offered one of the most comprehensive plans for improved career guidance. He has noted that a university cannot possibly change its structure or its departmental course offerings rapidly enough to keep pace with the appearance of new careers and the changes of the job market. "An institution can give an instant response, however, by creating a well-conceived career guidance program in which educational options can be tailor-made to individual student needs, provided there is also adequate flexibility in curricular requirements that will permit inter-departmental and inter-collegiate or even inter-institutional degrees" (1973, p. 36). In addition to advocating capable faculty advisors, Hale advocates the formation of a centralized career counseling, planning, and placement service that focuses on all aspects of career counseling, from self-evaluation and vocational assessment through vocational information and curricular planning and ultimately to job placement. Finally, Hale recommends that for the ultimate success of such a program, career education should be provided on a credit basis.

A number of educators suggest that many liberal arts majors have not yet been exploited in terms of their potential vocational possibilities. The April 1974 issue of *The Modern Language Journal* includes a report on an extensive survey of career opportunities available to graduates of foreign language curricula (McGrath, 1974a p. 290). The report contains not only facts on job opportunities but also recommendations on practical steps language departments can take to prepare students for a variety of positions. Similar studies in other liberal arts fields have been urged. They would probably reveal comparable opportunities for employment not now exploited. In other words, students need to be helped to understand the potential vocational applications of the basic arts and sciences, as well as of study directly related to a single occupational field.

2. Increased cooperative education has been another alternative stressed as a means of making higher education more "relevant" to the career aspirations of students. More than 400 schools now offer some form of cooperative education. At some schools, such as Antioch College, Wilberforce University in Ohio, and Northeastern University in Boston, cooperative program participation is mandatory. Such programs enable students to rotate between full-time campus study and full-time work with a cooperating employer. The value of cooperative education for students is not money but experience. The primary benefit of such programs to employers is the opportunity to hand-pick and pretrain prospective employees. According to Roy Beaton, a General Electric vice president, "some medium-sized companies are obtaining at least half of their college-graduate recruits from students who were in work-study programs (Catching on at Colleges, 1973).

One criticism of cooperative education is that students are pushed into occupations before they are prepared to make the decision. However, advocates of career education believe that offering cooperative education programs provides the opportunity for students to assess their interests and skills and to get a realistic picture of career possibilities while there is still time to change educational plans (Dawson, 1973, pp. 2-3).

3. Arguing along the same lines as those speaking in support of cooperative education, Joseph Katz, of the Institute for the Study of Human Problems at Stanford University, values more integration of the worlds of business and industry and higher education. This might be accomplished, according to Katz, through greater use of nonacademicians in higher education.

> People with a particular exemplary knowledge of their own occupational field, who are able to communicate it, or people who have an outstanding knowledge of an area outside of their occupation . . . . They would benefit the students not only through their intellectual knowledge and skills, but also through what they stand for as people. (1968, p. 432)

4. There is another possible means of incorporating the goals of liberal education—the attainment of thinking skills, social awareness and adaptability—and career preparation: providing vocationally oriented programs that provide students with knowledge rather than mere training, in essence including general education in programs emphasizing broad career areas. Learning exercises consisting or repetitive how-to-do-it techniques and memorization certainly don't meet this standard. However, instruction could conceivably provide sufficient general knowledge, even in a technical field, that the students could apply to the wide variety of circumstances in which it might later be needed, and also prepare them to extend their competence as new knowledge and skills emerge, that is, learn how to learn (McGrath, 1974b, p. 25).

5. The meshing of vocational and liberal arts might also be achieved through curricular rearrangements in which the basic theoretical structure of general

knowledge would be organized on an interdisciplinary basis related to the major life problems which all people encounter in our society. These general studies would then be paralleled by, and whenever possible integrated with, instruction related to an occupation or occupations (McGrath, 1974a, p. 288).

6. Another viewpoint suggests that liberal arts and vocationalism can and must coexist. The present increase in interest in training may be a natural reaction to the needs of our changing student body composition, many students coming from disadvantaged backgrounds. Lyman Glenny has pointed out that Maslow's hierarchy of needs seems to apply here, that, until certain essential physical needs are met, intellectual pursuits are bound to take second place. The physical and economic needs of the middle-class or upper middle-class student (the traditional college goer) are well met; that type of student will continue to enroll in liberal arts programs. The new student is one more interested in improving his personal economic status, but one who will later become a more economically secure adult, perhaps then seeking, as do middle-class students, psychological reinforcement and aesthetic satisfaction. This student then becomes a very likely candidate for continuing education if opportunities are readily available (Glenny, 1973, p. 9).

The results of the 1969 Carnegie Commission Survey of Students and Faculty seem to substantiate Glenny's theory of need satisfaction: The commission found that when students were classified by family income, those from relatively well-to-do families were especially likely to respond that training and skills for an occupation were not an important goal, while at lower income levels such training was more important to students (1973a, p. 172). This seems to imply that opportunities for higher education should be available to persons throughout their lifetimes and not just immediately after high school. Work and study could be mixed, reducing the distinct differences in the roles of students and workers and of various age groups.

More and more jobs are requiring not only basic skills and knowledge but also a willingness to keep on learning. More people are experimenting with several occupations during their lifetimes and need additional opportunities to learn new skills. Also, as our culture has changed to allow people more leisure time, people have sought a wider variety of experiences through travel, cultural opportunities, continuing education, and so on. Students should be able to choose liberal arts or career training, in whichever order meets their needs.

This solution through coexistence rests on the assumption that both liberal arts and vocationally oriented education programs are desirable, that diversity in programs is necessary in order to fulfill the various needs of students and society. Institutions of higher education cannot and should not try to be all things to all people. Each institution should decide upon goals of its own, upon what kind of students it hopes to attract, how it plans to educate them, and so forth. If these two programs are to coexist, if diversity of higher education programs is to be maintained in our society, the question arises as to who should be responsible for the various kinds of educational opportunities to be offered. Many leaders in education and government advocate more statewide planning for such determination. If the community and technical colleges become increasingly oriented toward vocational education, they may be able to relieve senior colleges and universities of such program responsibilities. However, this trend is confused by a simultaneous drift toward expansion of some vocational programs from two to four years, reinforcing the credential-providing function of institutions of higher education, a function highly suspect and much criticized. Conditions for giving credentials and expansion of educational requirements of vocational-oriented programs both need to be carefully evaluated in terms of actual job requirements. If on-the-job training has been adequate in the past, is training in an educational institution necessary now? If an associate degree program has been adequate in the past, is there real value in expanding the program to four years (Gilli, 1975, p. 28)?

7. A final suggested solution—a movement toward career education—incorporates much of the foregoing. The Council of Chief State School Officers, assembled in Washington on June 13, 1974, accepted a report from its Committee for Career Education in which the following statement was ratified.

> Career Education is essentially an *instructional* strategy, aimed at improving educational outcomes by relating teaching and learning actitivities to the concept of career development. Career Education extends the academic world to the world of work. In scope, Career Education encompasses educational experiences beginning with early childhood and continuing throughout the individual's productive life. A complete program of Career Education includes *awareness of self* and the *world of work, broad orientation to occupations* (professional and nonprofessional), in-depth *exploration* of selected *clusters*, career preparation, an *understanding of the economic system* of which jobs are a part, and placement for all students. (Marland, 1974, pp. 105-106)

In *Career Education*, Marland identified some states making definite moves toward career education (1974, pp. 155-160): Georgia, Texas and California are making changes primarily at the elementary and secondary levels, but they emphasize that the concept applies at all levels; Oregon is making changes at all levels, including postsecondary. Another example of movement toward career education at the postsecondary level is at Columbia University. In 1973, Columbia University launched a major reform in its general education program to provide undergraduates with more technical, career-oriented offerings while graduate students in the professions received more in the humanities. Claremont College in California has also made changes toward a more career-oriented educational program. Even Chatham College in Pittsburgh, a long-time liberal arts college for women, has reoriented its philosophy toward career education. A brochure from the director of admissions in 1974 described Chatham to prospective students:

> The fact is that the business world . . . wants the leadership skills of Chatham women—skills developed through rigorous training in the liberal arts. Examples? The ability to think critically and analyze assumptions. To communicate precisely and effectively. To bring a sense of cultural and historical perspective to problem solving . . . The only trick is striking a balance between academic and actual work experience . . . . Our students

> can take career internships in business and non-profit organizations all over Pittsburgh. . . . Internships help to give our students the "real-world" experience needed to make intelligent, confident career decisions. . . . Each program covers a broad range of possible careers. (Marland, 1974, p. 221)

Conclusion

In spite of a lack of substantial statistical data on the subject, the foregoing certainly provides evidence that higher education must change and that it probably will become more vocationally-oriented, hopefully not at the expense of the goals of liberal arts education. Without jeopardizing the traditional goals of education, there appear to be a variety of steps which can and should be taken to enhance the employability of institutional graduates: teaching students how to learn, inculcating in them a broad understanding of the society in which they live and an ability to adapt to change, to think, to create. Such steps might include greater curricular flexibility, including more interdisciplinary course offerings, cooperative education and internship programs; greater integration of our institutions with our society through use of nonacademicians in the classroom and through the encouragement of life-long patterns of formal education; and more realistic and comprehensive career counseling and education.

We must also keep in mind that liberal arts curricula and high level, vocationally-oriented university programs, even modified to be more relevant to the world of work, still will not provide suitable higher education for all students. Diversity of education programs, among and within institutions, appears to be essential in order to provide desirable options for all students of all ages. The long-term desirability of a broad liberal arts education that enables one to adapt effectively to our changing society, and to take advantage of training quickly and easily, is recognized; however, creativity, advancement of knowledge and an in-depth understanding of our world are not the ideals of all students, at least not at the same point in life. The option of training exclusively as preparation for a career should be available to students; however, such programs may not necessarily belong in our universities and colleges, but rather in training centers, the two-year schools, technical institutes, or the business-industry-goverment complex. Continuing education programs in colleges and universities should be available for students who choose such programs. This would enable them to achieve more broadly based educational goals later in life or not at all, depending upon personal readiness for such education.

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ABSTRACTS OF ADDITIONAL CONTRIBUTED PAPERS

AN EMPLOYMENT FOLLOW-UP STUDY OF CAREER EDUCATION STUDENTS OF A COMMUNITY COLLEGE

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The purpose of this study was to develop a system for surveying former occupational students and their employers to evaluate the effectiveness of occupational programs in providing marketable skills.

A partial cross sectional design was selected to survey all students enrolled in the college occupational programs (except allied health) in the fall term of 1972 who did not continue in the following academic year and who still had not re-entered at the time the study population was identified. A data base was designed and developed to provide a computer record for each student. It included pertinent data from the college records system as well as the additional data collected in this study. Follow-up data was collected by questionnaires mailed to former students and their employers.

The results presented include a description of the system, characteristics of the sample, and an analysis of the follow-up data. Student responses relate to such areas as current employment status, relationship between employment and educational program, and the contribution of the college program in gaining employment, increasing opportunity for promotion, and earning a higher salary. Employer responses relate to the preparation of students in such areas as required job knowledge, understanding of theory, and familiarity with necessary equipment.

RHETORIC VERSUS REALITY—THE DILEMMA OF THE COMMUNITY COLLEGE

Gordon Jones, Research Director, Regional Office of Institutional Planning and Development, Vancouver Community College

This paper reports a study, a four-year statewide evaluation, of a Canadian postsecondary educational system with a major focus on the two-year community college. Other facets of the study include the role of the university and technical institutions as components in the postsecondary educational system.

The purpose of the study was to determine the expectations of society towards the community college and the extent to which these expectations are realized.

Principal findings include the following: (1) democratization of postsecondary education is evident, but an elitist view does linger on; (2) the college is an educational environment, yet the community generally looks upon it as a training ground for jobs; (3) the college does provide an opportunity for life-long learning, but the opportunity is given a low priority; (4) the college-to-university transfer student does not do as well as the direct entry student, yet, in spite of problems experienced by these students, their achievement is credible; and (5) the academic ability of the college transfer student is lower than the general university student, but, at the same time, there is a great range of abilities and considerable overlap.

It is concluded that without a systematic and continued evaluation of community college programs rhetoric will remain indistinguishable from reality.

A MULTI-COMMUNITY COLLEGE: CONFLICTING PRESSURES AND PERCEPTIONS

Dennis E. Nelson, Office of Educational Research, College of the Mainland

One fundamental influence in the public support and acceptance of the community college movement has been the assertion that such institutions can and should be calibrated to the needs and desires of their service area citizenry. Recently, increased attention has been given to more detailed analyses of these constituencies, their characteristics and expressed desires.

Following an overview of the five contiguous political entities comprising the taxing district of College of the Mainland, a community study is presented in which three categories of information were solicited in addition to respondent background data. Responses were sought with regard to (1) knowledge of the institution, (2) evaluations of the college and what it does, and (3) hopes, fears, and desires in relation to what the future of the college will and should be.

The three major hypotheses that were formulated

prior to the investigation were: (1) there is a discrepancy between institutional mission, as perceived across communities, and what has been mandated by the state; (2) low SES constituents within communities will hold more favorable perceptions of the college than will high SES subjects; and (3) those respondents having the greatest knowledge of the school, irrespective of community, will hold more favorable perceptions of the institution than will respondents with less knowledge. Discussion of additional findings include both conflicts and congruencies not originally hypothesized (e.g., disagreements between segments within and between communities over what should be the source of additional revenue for the institution).

GEOSYSTEMS—A RESEARCH TOOL USEFUL IN INCREASING ENROLLMENTS AND IMPROVING COLLEGE PARTICIPATION RATES

Arthur N. Cherdack, Director of Educational Research and Analysis, Los Angeles Community Colleges

Our large multicampus community college district has successfully used several available technical computerized tools to identify regions with low and high community college participation and attendance rates. This presentation will (a) describe the technical software tools employed in developing our system, and (b) discuss the practical applications of the system for potential users.

This relatively inexpensive planning system, entitled *geosystems*, is applicable to all types of educational institution. It provides a basis for needs assessment, which may be defined as identifying localities needing educational services. It allows us to target areas for survey research and marketing techniques designed to discover what services residents most desire and what types of delivery mode (i.e., television, outreach classes) are most relevant. Moreover, it can assist in determining the need and location for a new site or outreach program, as well as allow one to define college service areas, both as localities we now serve and as locations we should be serving. Since certain demographic, agency, and student information can be plotted on house address information, we are able to study and compare other student variables such as ethnicity, veteran status, sex, income, and age as they relate to nonstudent population.

NEW STUDENTS—OLD CURRICULA—CONFLICT IN THE EDUCATION OF MATURE STUDENTS

J. Rodney Davis, Director, Accelerated Program for Adults, La Verne College

This paper describes a baccalaureate degree program for adult students working full-time, the identified *new students*. The program went through design and experimental stages that tested experience-oriented concepts of adult education, institutional adaptation, and program implementation. An evaluation of the program is reported.

A high level of acceptance by students and wide support by faculty do not hide the strain placed on the traditional curriculum by nontraditional, but not necessarily new, aspects of study which include independent study, course challenge, directed study (prescribed self-study), and credit for learning from prior experience.

The paper discusses a cost- and time-effective model for the assessment of learning from prior experiences, the place of work in liberal arts study, and an experiential emphasis in learning that goes beyond an interest in facilitating learning.

ADULT LEARNERS AND TRADITIONAL STUDENTS: A COMPARISON OF VALUES, ATTITUDES AND ASPIRATIONS

Robert V. Hanle, Dean of the Faculty, Elizabethtown College

Elizabethtown College has been historically a traditional liberal arts institution in the career-oriented programs of business, education, and, more recently, the health professions. In 1972, the faculty adopted primarily for adults a new nontraditional educational program called the Center for Community Education. The purpose of the center was to offer a variety of innovative programs leading toward the baccalaureate degree.

The first degree was awarded in March 1973. To date, 167 degrees have been awarded to qualified candidates meeting the standards of excellence established for the program. There are seven baccalaureate and associate degrees available in the center.

The success of the program stimulated some interesting questions with respect to the impact the degree has had on the recipient's personal and professional aspirations. It was felt that a study of the comparison of values, attitudes, and aspirations shared by the recipients of the nontraditional degrees with the graduates of the traditional program would provide additional insight into the similarities and differences between the groups the college is attempting to serve.

The research project resulted in the comparative analysis of the graduates of both programs regarding their backgrounds, their motivations for enrolling at the college, and the impact of the degrees on their professional aspirations.

STATE FINANCING AND INDEPENDENT HIGHER EDUCATION IN CALIFORNIA

Fred Thompson, Higher Education Specialist, California Postsecondary Education Commission
George C. Carter,
Gary A. Fiske,
Charles A. Pillsbury, California Postsecondary Education Commission

The purpose of this paper is to assess the merits of the various arguments which have been advanced in support of further commitment on the part of the

state of California to subsidization of students attending private colleges and universities. These arguments are that (1) private colleges and universities face severe financial crisis, and if present trends continue, many may be forced to close their doors to students, thus denying large numbers of future students access to the college of their choice, and (2) the production of higher education in California would be more efficient if the pattern of subsidy were relatively more favorable to private producers.

We come to four conclusions: (1) that further diversion of students from public to private institutions is not necessary at this time to insure viability of the private sector of California higher education, (2) that such a policy, if adopted, would only minimally assist those private colleges and universities that face severe financial difficulty, (3) that, while recognition of other social and societal goals may lead to a different conclusion, the demise of a few or even several institutions would not necessarily warrant a drastic change in the pattern of public support (indeed, the narrow economic view holding that the health of society positively requires the weakest of these, both private and public, to go to the wall), and (4) that further diversion of students from public to private institutions cannot now be justified on economic grounds.

COLLEGE ATTRITION: A CAUSE APPRAISAL TECHNIQUE

Bartholomew J. Ciampa, Director of Teacher Training and Associate Professor of Education, Nasson College

A unique institutional approach to the study of the causes of student attrition was recently completed at Nasson College, a private, nonsectarian liberal arts college located in southern Maine. The scope of the study should enable it to be effectively applied at other colleges and universities.

The Task Force to Study Attrition was commissioned by the college president to include representatives from the office of academic administration (faculty representative), the offices of admissions, development, student personnel, and the registrar's office. Its specific charges were (1) to compare the student persistence rate at the college with national statistics, (2) to determine the cause(s) of attrition, and (3) to make recommendations to the college community which would ostensibly curtail student out-migration wherever remedial.

A questionnaire survey technique was employed with items designed to elicit responses in the area of student personnel services, admissions effectiveness, curriculum and instruction. Eighty-one statements were devised with provisions made for both open-ended and categorical responses. Categories included (a) strongly agree, (b) agree, (c) disagree, (d) strongly disagree, and (e) no opinion.

Although the instrument was designed to identify the reasons contributing to a student's decision to withdraw, it was also intended to identify the college's assets from a student's perspective so that these strengths could be enhanced.

SENIOR COLLEGE PERFORMANCE OF CUNY COMMUNITY COLLEGE GRADUATES UNDER OPEN ADMISSIONS

Lawrence Podell, University Dean, Office of Program and Policy Research, City University of New York

Open Admissions—the guarantee to all New York City high school graduates (from June 1970 onward) of a place in the City University of New York—was implemented in September 1970. However, high school average continued to influence admission to senior colleges.

An articulation policy, established in 1970 and strengthened in 1972-73 was intended to facilitate the transfer of CUNY community college graduates to its senior colleges by insuring the latter's acceptance of students with associate degrees.

This paper concerns the senior college academic performance (retention, credits earned, grade point average and graduation) of fall 1973 community college transfer students, four semesters after transfer to the senior college.

For each of these variables, the data has been controlled upon past performance (high school average, cumulative grade point average prior to articulation, and grade point average in the semester preceding articulation).

In order to provide comparative perspective, these data are also provided for students who originally enrolled at the senior colleges in fall 1970 and 1971, at the same time as the original enrollment of the transfers, and were lower juniors in fall 1973.

COLLEGES AND CAREERS: A STATEWIDE STUDY OF THE EDUCATIONAL AND CAREER PLANS AND ASPIRATIONS OF BACHELOR'S DEGREE RECIPIENTS IN INDIANA

Robert M. Greenberg, State of Indiana Commission for Higher Education

The Indiana Commission for Higher Education is conducting a college-level manpower study, the goal of which is to provide current information regarding the supply of and demand for college graduates to the work force. One of the major problems encountered in such a study is the identification of relationships between college degrees and employment. College-level manpower supply cannot be adequately estimated without an assessment of the employment plans of the degree recipients themselves.

In the spring of 1975, the commission conducted the Occupation and Career Interests Survey, a questionnaire survey of a random sample of 25 percent of those who were to receive the bachelor's degree in the state at the end of that academic period. Respondents were asked about their educational, short-term occupational, and long-term career plans, and about factors influencing their choices concerning these matters. Because the survey was administered shortly before the respondents' graduations, it provides a realistic appraisal of college-level manpower supply to statewide educational planners, institutional program planners, and to students and those who work with them as they consider employ-

ment and career alternatives.

PERFORMANCE OF DISADVANTAGED STUDENTS WITH AND WITHOUT COMPENSATORY PROGRAMS

Judith Piesco, Graduate Student,
Office of Program and Policy Research,
New York University
Lawrence Kojaku, New York University

The SEEK program is a compensatory effort of the City University of New York to provide services—remediation, tutoring, counseling, and financial aid—intended to enable disadvantaged students to successfully complete their education at the CUNY four-year colleges. With the implementation of an open admissions policy in September 1970, similar students began to enroll in the senior colleges of CUNY, making a comparative study possible.

This paper concerns the academic performance of 1971 freshman students at the four original senior colleges of CUNY (City College, Hunter College, Brooklyn College, and Queens College). The performance of SEEK students is compared with that of comparable disadvantaged students four years after their initial enrollment. This is done for each of the four colleges separately and for the four colleges combined.

WHERE TO CUT THE BUDGET—PROGRAM OR PLANT?

Michael S. Shirley, Staff Associate,
Office of Resource Planning
University of Illinois

The purpose of this paper is to provide a tool for administrators who must make resource allocations between academic departments and the physical plant department.

This study describes the problem of allocating scarce resources between academic programs and physical plant programs, describes measures being taken by one university, and presents alternative models which determine the amount of resources required to maintain the physical plant of a campus.

Since most existing models generate requirements which exceed available resources in today's economic climate, allocation methods must be found that combine the standards desired and the resources available. This paper attempts to describe a method of classifying the physical plant operations by fuction and attributing fixed and variable costs to each of these functions based on stated assumptions. This method will provide information which will allow the chief administrators to make trade-offs, consistent with the mission of the campus, between physical plant functions and academic functions.

DIFFICULT BUDGETARY DECISIONS: A DESK-TOP CALCULATOR MODEL TO FACILITATE EXECUTIVE DECISIONS

R. Bruce Tweddale, Assistant Director
of Institutional Research, Grand Valley State Colleges

This paper is a presentation of a budgetary decision model developed to aid the executive officers in arriving at tentative decisions on enrollment, tuition rates, increased compensation, and level of staffing as they affect the total institutional budget. The model utilizes a desk-top programmable calculator (in this case, a Burroughs Model C 3660). The model allows the executive officers to meet together and test inputs to the budget and to receive immediate feedback on the size and nature of the resulting institutional budget.

The outputs allow the decision makers to discuss immediately the effects of their decisions on inputs as they relate to outputs. They may run through the model any number of times until they have arrived at a consensus as to which mix of inputs is both politically and economically feasible.

The same type of modeling could obviously be done on a computer, using a terminal instead of a programmable calculator. However, the use of a calculator has certain advantages in terms of expense, ease of programming, and portability.

INSTITUTIONAL RESEARCH STUDIES FOR IMPROVED CURRICULUM MANAGEMENT

Fred H. Wise, Director of Institutional Studies,
Old Dominion University

Curriculum is the chief instrument by which an institution carries out its purpose, and some 80 percent of expenditures are in the curricular-instructional subsystem. Improved management of curriculum at all levels within the institution holds a tremendous potential for cost reduction through improved effectiveness and efficiency.

This paper suggests that institutional researchers have the expertise and a responsible role to play in providing relevant analytical information to curriculum managers through a process of information selection, analysis, summarization, and presentation such that the information is directly relevant to a specific decision-making situation.

The author reports research and developmental work resulting in six subsystems which provide curriculum managers with analyses of each program curriculum, course production and contribution to programs, course cost, enrollment, course utility, and course content overlap and duplication. A Course Attributes Inventory is proposed as a presentation medium and a vehicle for search and comparison across courses and programs. Each subsystem is described in sufficient detail that the concept of information system

maturation will be readily understood. Educators should be stimulated to initiate further development of their existing systems for possibly improved curriculum management in other specific decision-making areas.

THE RELATIONSHIP BETWEEN GRADING AND STUDENT RATINGS OF INSTRUCTION: DIFFERENTIATING VERSUS SATISFYING STUDENTS

Lawrence K. Kojaku, Assistant Professor, New York University
Edward L. Delaney, Jr., Research Associate, Center for Study of Higher Education, New York University

This study was concerned with the relationship between faculty grading patterns and patterns of student ratings of instruction; it asked whether an instructor's grade distribution across courses related to the ratings he generally receives from his students.

The data of this study were more than 40,000 completed Student Instructional Report (SIR) questionnaires evaluating some 3,600 undergraduate courses at a large, urban, private university. The correlation between expected course grade and eight rating scores (six factor scales and two summary items) was lowest with the course as the unit, and highest with two or more courses taught by the same instructor as the unit of analysis.

When mean expected grade of an instructor's courses was correlated with his or her mean course ratings, controlling for the instructor's rank and subject field, a high coefficient resulted. Moreover, the proportion of variance in an instructor's course ratings associated with the combination of instructor's rank, the subject field, and mean expected grade in his or her courses was significant and higher than that associated with instructor's mean expected grade alone.

This study suggests that the ratings which an instructor receives from students are not completely independent of the effects of the instructor's rank, subject field, and most particularly, grading pattern.

DIFFERENCES IN ACADEMIC DECISION-MAKING BELIEFS OF ASPIRING FACULTY AND CURRENT FACULTY IN A SCHOOL OF EDUCATION

Philip C. Chamberlain, Acting Vice President for Academic Affairs, Walden University
Richard C. Pugh, Professor of Education, Indiana University

The purpose of this study was to compare the academic-decision making beliefs of aspiring professors of education with the beliefs of current faculty of a school of education. It was hypothesized that there would be no difference in the beliefs of the two groups.

Two decision-making constructs were developed: one defining traditional decision-making processes of institutions and labeled Collegial-Humanistic (CH); the other referred to as Technological-Analytic (TA) and tending to be product centered and criteria referenced. Thirty-five descriptive statements for each construct were developed as the basis for constructing a 70-item deck of cards to be used as a *Q* sort technique. For each of 20 selected faculty of a school of education, a doctoral student was identified who aspired to be a professor in the same substantive area as the faculty member. The *Q* sort was administered following usual procedures. The difference scores of the *S*'s had a reliability coefficient of .89.

A significant difference at the .01 level was found between group mean scores using a random block analysis of variance. Relative to current faculty, the aspiring faculty was significantly more in agreement with beliefs attendant to TA decision making.

CONFLICT MANAGEMENT AS AN INTEGRAL PART OF PLANNING IN THE UNIVERSITY

Molly T. Vogt, Division of HRP Interdisciplinary Programs, School of Health-Related Professions, University of Pittsburgh

Since societal norms and values have changed so drastically during the last five years, educational institutions are being forced to respond and react to intense pressures both from within and from without their own organizations. Moreover, a forward-looking institutional planning function requires that organizational forms and modes be arranged to anticipate and benefit from these often conflicting pressures and changes. Thus, institutions are moving away from their traditional closed systems toward a more open system mode of operation. The dynamism and changes will result in a substantial redistribution of power within the system and, thus, increase the level of conflict. This paper utilizes a conceptual management model to critically examine conflict management relative to the planning process in the university.

THE USC FACULTY PLANNING MODEL

Robert H. Linnell, Director of Institutional Studies, University of Southern California

Faculty planning, always important, has rather suddenly become a major interest in charting the future of higher educational institutions. In a no-growth, or possibly even a negative-growth situation, there is great concern for (1) faculty viability, (2) ability to develop new academic initiatives, and (3) fiscal integrity. The impact of inflation, recession, declining birthrates, declining economic value of college degrees, and changing attitudes toward higher education is causing major problems. In these circumstances, there is an urgent need to predict the future impact of current policies and decisions. Faculty planning is probably the most critical since, typically, tenure decisions will carry a future commitment of 25 to 30 years.

There are several policy factors which, at least to some extent, can be controlled. These are (1) retirement age and economic features of retirement plans, (2) rate of tenure of nontenure faculty, (3) hiring practices involving rank, salary, sex, and minority status,

and (4) promotion from junior to senior ranks. Several other variables, if not controllable, can be studied for their impact. These include death, resignation rates, ratio of full-time to part-time faculty, and salary scales and levels and how they might change with time.

The cohort-oriented USC Faculty Planning Model requires current faculty characteristics (age, rank, salary, and years of service) as data input. It computes next year's faculty according to the policy inputs. Probabilities are used, and several runs are made for each set of policies, yielding an average and a range of outcomes.

The USC Faculty Planning Model enables one to make accurate predictions, 10 to 20 years or more into the future, based on current policies and practices. The model has an on-line capability so that a large number of possible policy alternatives and their complex interactions may be explored in a relatively short time. This feature not only enables academic administrators to do better planning, but it also provides a tool for administrators and faculty together to explore alternatives and to reach agreement on optimal policies consistent with the goals of the institution. Faculty characteristics which are generally studied include (1) percent and number tenured, (2) rank and age distributions and average age, (3) faculty cost, (4) positions opening and cumulative number of new hires, and (5) affirmative action projections of percent of women or minority faculty.

COLLEGE GOALS AND GOVERNANCE: THE DEGREE OF CONGRUENCE OR DISAGREEMENT IN VALUE SYSTEMS AMONG FACULTY, STUDENTS, AND ADMINISTRATORS

Robert D. Brown, Dean of Institutional Research and Development, Arkansas College

Those who control the funds for higher education are demanding that institutions clearly define their missions and demonstrate that outcomes produced through effective allocation of scarce resources are closely related to stated goals.

The problem is that too few institutions have really considered what their goals are, and those that have often find that the various members of the college community disagree over what the purposes of the institution should be.

Not only does there seem to be a lack of clarity regarding goals, but also a lack of agreement as to who should make the policy decisions. With mounting pressures in recent years from faculty and students to have greater participation in college governance, a counter pressure today is that of the demands of accountability in the use of financial resources.

This study looks at a small, private liberal arts college at a moment of possible disorientation resulting from planned change and at a moment of major shift from its traditional role.

The college, under new presidential leadership, has just undergone a comprehensive year-long evaluation and planning process designed to redefine its mission to plan its future course as it enters its second one hundred years.

INEQUITY AND INEQUALITY IN SALARIES: A CASE STUDY IN METHODOLOGY

Barbara Brittingham, University of Rhode Island

Recent pressures in the area of affirmative action have motivated numerous institutions of higher education to examine faculty salaries with regard to equal pay for equal work. The two approaches traditionally used to identify inequities have been termed "advocacy" and "actuarial." The advocacy technique involves identifying pairs of individuals (for example, one male and one female) and showing the contrast in salary against all similarities in highest degree attained, years in the profession, rank, subject area, college, and the like. The actuarial technique looks at average groups that share a set of characteristics (for example, college membership, department, terminal degree, years in rank), and, in a sense, examines every possible paired comparison.

The study used an actuarial approach to determine the extent to which a set of variables can predict actual salary using stepwise multiple regression. The subjects are 700 faculty members in a university setting. Variables used include age, sex, rank, terminal degree, time in rank, previous experience, as well as the 1974-75 awards of inequity adjustments (made to certain women faculty selected by the paired-comparison advocacy approach), market adjustments, and merit increases. Salaries were predicted using nondiscriminatory factors such as degree and rank, and residuals were related to factors such as sex which might be considered discriminatory.

RESOLVING CONFLICTS IN FACULTY DEVELOPMENT: STATEWIDE COORDINATION VS. INSTITUTIONAL NEEDS; INSTITUTIONAL GOALS VS. FACULTY DEVELOPMENT NEEDS

Clare Rose, President,
Glenn F. Nyre, Executive Director,
Evaluation and Training Institute,
Los Angeles, California

Faculty members are the major resource of colleges and universities, and their talents, interests, and skills must be systematically cultivated and nurtured as a part of their ongoing personal and professional development. Unfortunately, the current response to this recognition has been an epidemic influx of faculty development programs.

The situation is unfortunate because what is going on is not systematic, nor is it typically relevant to systemwide, institutional, divisional or departmental goals and needs. Programs that have not been rigorously evaluated are being emulated on other campuses with even less scrutiny. Occasionally, someone records attendance at events, but no quantitative data exist on this newest venture in higher education.

Institutional researchers have the necessary skills to

determine whether or not programs should be allowed to fade with other fads or if the financial expenditures they are receiving deliver actual, long-term value in terms of student learning. They must stand in the forefront of the "movement" in order to continuously assess the impact of the programs and to monitor their effect on institutional goals, programs, and processes.

This paper focuses on two extensive efforts in these directions: one in a large statewide system and one in a professional school of a major university. The implementation and evaluation procedures used for them were quite different, but both had to overcome conflicting needs and goals on the part of the "developers and the developees."

A LONGITUDINAL ANALYSIS OF THE ACTUAL AND PREFERRED USE OF FACULTY TIME

Harry J. Knopke, Evaluation and Program Development Specialist, University of Wisconsin-Madison

To identify areas of potential role conflict for faculty, and to subsequently reduce or alleviate the effects of conflicting pressures on faculty, a longitudinal analysis of faculty role was conducted within one school of a university during a program of planned change. The results of the combined quantitative and qualitative faculty activity analysis were used to determine where divergence existed between actual and preferred uses of time, to identify appropriate resources to assist faculty in pursuing their roles, and to evaluate the process of implementing the school's new curricular and instructional program.

Faculty members were asked to respond to an instrument containing 65 activities representing either teaching, research, clerical/administrative, professional practice, or general faculty responsibilities. They were asked to specify the amount of time they actually spent on each activity during the interval of one course, and to indicate the amount of time they would prefer to spend on each.

After each administration, the data were analyzed using the rank order of individual activity item the rank order of groupings of activities, and the variability of the rankings. Analyses provided comparisons between the actual and preferred uses of time, assessments of longitudinal changes in actual and preferred uses of time, and longitudinal comparisons between actual and preferred uses of time.

MANAGEMENT PLANNING: AN EVALUATION OF THE MODEL IMPLEMENTED AT FURMAN UNIVERSITY

David E. Suddick, Director of Testing, Governors State University
O. Suthern Sims, Jr., Vice President for Student Affairs, Furman University

The Ford and Exxon Foundations funded a management planning program at Furman University. Pre- and post-program data revealed a constructive change in the perceptions of the users. Decentralization of decision making improved communication and (1) increased awareness by the members of the university of alternatives and rationale for decisions, (2) contributed to abating crisis management, and (3) made available more clear-cut lines of authority for affirmative action.

Institutional research documentation, furthermore, was an integral component of the model. The tenets of management planning may, with minor modification, be generalizable to similar institutions of higher education, a major intent of the funding. The philosophic constructs of the model are that a systematic approach to complex problems, not available in the past, now exist. The management by objective (MBO) trip analogy is the point of departure. The complexity of implementing and using MBO and related tools are detailed, as are two major factors which may inhibit success—the personnel themselves and poor communication among components of the model.

SURVEYING COMMUNITY SERVICE PROGRAMMING IN POSTSECONDARY INSTITUTIONS

Paul R. Lyons, Associate Dean of the College, Frostburg State College

Within the framework of the Higher Education Act (Title I) definition of community services, this study of institutional conditions set about to survey, nationally, basic indicators of postsecondary institutional commitment to community services activities and the direction of growth or decline in the development of community service programs and activities. More specific objectives of the research were (1) to examine the basic level of administrative support provided by postsecondary institutions for community service activities by type of institution (level) and by control, by size of institutions, and, by size of community in which the institution is located; (2) to examine the institution's involvement of community residents in community service advisory groups, using the same independent variables above (as was the case in the two objectives that follow); (3) to examine the extent or existence of programs designed to meet specific community needs; and (4) to examine the reported trend over time of growth or decline of programs designed to meet specific community needs.

In general, the data indicated that institutional commitment to an existence of community service activities seems to be a function of institutional type and size of community in which the institution is located.

A MAJOR CHANGE IN A CHANGE OF MAJOR STUDY

Douglas R. Pierce, Evaluation Associate, Northwest Regional Educational Laboratory
Ray Boche, Director, Computer Center, California Polytechnic State University, San Luis Obispo

The impetus for this investigation was the use of "false majors" as a holding pattern by students seeking admission to oversubscribed fields of study, confounding

enrollment projections. Thus, an investigation was begun of net migration patterns of student majors in a medium-sized state university. The findings alleviated the initial concern but suggested the larger study emphasized in this paper. This redirection took the form of hypotheses that a change of academic major would result in higher costs to the student in the form of elapsed time to completion of a degree and to the university in the form of excess units beyond those required for the degree attained.

About 1,500 graduated students were categorized into three groups identified as stable (graduated in initially declared academic major), shift (different major, same school), and change (different major, different school); analyses were repeated using HEGIS code groupings. The Kruskal-Wallis analysis of variance confirmed the hypotheses with an unexpected twist. The costs in terms of elapsed time and excess units were lowest for the stable group, but greatest for the shift group. Further understanding of the pattern was found in multiple variables including student origin (native versus transfer), GPA, sex, and age.

THE RESEARCH AND DEVELOPMENT OF A POSTSECONDARY STUDENT FOLLOW-UP MANAGEMENT INFORMATION SYSTEM FOR TEXAS (PROJECT FOLLOW-UP)

Jim F. Reed, Director of Project FOLLOW-UP
Jeannene Cox, Associate Director of Project FOLLOW-UP, Tarrant County Junior College District

Project FOLLOW-UP is currently developing and testing a management information system designed for the follow-up of students who enter Texas public community and junior colleges.

The total system is comprised of various subsystems concerned with different populations of students. The follow-up subsystems that follow are currently in the process of being developed: (1) student's educational intent, (2) withdrawal follow-up, (3) nonreturning student follow-up, (4) graduate follow-up, (5) employer follow-up, (6) adult and continuing education follow-up, and (7) state follow-up reporting.

Extensive testing of these subsystems is being done on a local institutional basis. Over half of the public community and junior colleges in Texas are involved in these pilot tests, with seven institutions doing in-depth work on a subcontract basis. The data being generated through these studies are being documented and utilized.

The overall design of this student follow-up system by Project FOLLOW-UP is being largely influenced by the findings and conclusions of a statewide study which has been conducted by the project. The study, utilizing the Delphi research method and entitled SCOS-DELPHI (System Characteristic Opinion Study), was initiated for the purpose of gaining consensus regarding the characteristics, terminology, and so forth, desirable in a state-coordinated follow-up system. Panelists were chosen from varying occupational areas and were representative of the public community/junior colleges in Texas. Personnel in the state agencies were also among the panel members.

Project FOLLOW-UP became operational in May 1974, and the current funding period will terminate in August 1976, at which time the follow-up system and recommendations for future action will be presented to the state.

THE MISSION AND GOALS OF GEORGE MASON UNIVERSITY AS TESTED BY A UNIVERSITY WIDE INSTITUTIONAL GOALS INVENTORY

John P. Sullivan, Director of Institutional Analysis, George Mason University

This paper covers the following areas:

1. It discusses the background of motivations, procedures and methodology employed in drafting the original mission statement and ten university goals and the conflicting pressures of all constituencies on the Board of Visitors (BOV).
2. There is discussion of the first five core statements, then expansion of four additional basic goals.
3. It covers the delayed attempt to administer the *Institutional Goals Inventory* (IGI), finally initiated after development and promulgation of the original nine goal statements.
4. It discusses the approach and procedures used in administering the IGI as well as describing the IGI package and how the population to be inventoried was selected.
5. It includes the IGI Inventory Summary Profile charts.
6. There is a comparison of perceived (is) and desired (should be) rankings of the IGI goals statements and goals areas as well as comparison with the existing George Mason University Mission and Goals Statements as promulgated by the BOV.
7. It discusses those statements and areas where wide divergence exists between the IGI results and the University Goals Statements.
8. It also discusses those statements and areas where wide divergence exists between the perceptions and desires of the different constituencies of the university community—BOV, administration, faculty, students and alumni.
9. Finally, it includes an evaluation of the worth of this procedure. Relationship of results to statewide educational missions and goals as well as the institutionalizing of the goals and mechanism for reflecting changing goals and requirements are also discussed.

THE JOB MARKET VS. COLLEGIATE CURRICULA: A POTENTIAL CONFLICTING PRESSURE

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Lack of compatibility between collegiate curricular programs and the needs of the job market can bring about a basic conflicting pressure between the desire of institutions to offer a full range of programs and the obligation of those institutions to provide graduates

with marketable skills. Recent studies at the University of Illinois bear directly on the relationships between the job market and traditional curricula and, thus, provide considerable insight into the attendant potential competing pressure.

Results of surveys of graduates (based on the 1972 and 1973 classes) soon after receipt of a degree are used in the paper to document the existence of dramatic differences in level of vocational success achieved by the graduates of various curricular areas. Measures of vocational success discussed include unemployment rate, underemployment rate, incidence of employment in jobs related to the college curriculum, and annual salary. The persistence of these patterns over time is examined using results from a 1975 survey of 1970 graduates. The extent to which graduates seemingly are concerned about the existing curriculum-job market relationships also is discussed. The paper concludes by addressing the implications that the apparent conflicting pressure has for institutional and student planning.

CONFLICT IN COST ANALYSIS: EXPERIENCES WITH THREE DIFFERENT COST MODELS

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This paper will present the results of one university's experience with three different models for determining institutional program costs: the NCHEMS IEP, the Ohio Board of Regents Resource Analysis Procedure, and the Association of American Medical Colleges Cost Study.

The University of Cincinnati was one of the few large, complex, research institutions to pilot test the NCHEMS IEP cost methodology. As one of twelve universities in the state system, Cincinnati's program costs also are being determined by the Ohio Board of Regents through their statewide cost model known as the Resource Analysis Procedure. In addition, cost studies have been conducted at the University of Cincinnati Medical Center utilizing the methodology developed by the Association of American Medical Colleges.

After tracing the history of Cincinnati's involvement in each of these three cost models, sample results are presented to show how one model differs from the other. The paper discusses the good and bad features of each of the models, and recommendations are offered on how higher education might improve its credibility for cost finding based on experiences with these three models.

NCHEMS COSTING AND DATA MANAGEMENT SYSTEM AND THE PURDUE UNIVERSITY COST STUDY: A COMPARISON OF DIRECT COSTS

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Purdue University has developed a cost system over the past twenty-five years that incorporates many of the same basic components built into the Costing and Data Management System developed by the National Center for Higher Education Management Systems (NCHEMS) at WICHE. These components are quite different from a conceptual, technical, and mechanical standpoint, but, in general, both systems require similar inputs and have similar objectives. Required inputs include faculty activity data, student data, and expenditures and related accounting data, while outputs ultimately are program unit costs, both direct and total.

This comparison addresses only direct instructional program unit cost outputs where direct cost was narrowly defined as faculty and staff earnings and benefits associated with the contact teaching activity. The comparison's primary objective was to isolate and examine unit cost differences that occur when costing by course level (the NCHEMS approach using the Instructional Workload Matrix) versus costing by each unique course as is done within the Purdue Study.

The results revealed that significant differences in specific program direct costs per FTE student exist between the two methodologies. However, when the individual programs were aggregated into larger entities corresponding to schools, the absolute differences in the unit costs averaged less than eight percent for all undergraduate-level programs and about four percent for all graduate-level programs. It is also evident from the results that for those institutions where there is no definite relationship between the course level and the student classification, except within the exclusive graduate courses, direct costs from a course-level-oriented distribution methodology may distort the program unit costs as compared to a methodology which utilizes each individual course and its unique student program-student classification mix.

DISTURBING CONCLUSIONS DRAWN FROM THE LITERATURE OF COST ANALYSIS

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As the first phase of the American Council on Education Study of Cost Analysis in Higher Education, project staff evaluated the literature of cost analysis applications in colleges and universities. In addition to providing a background for the research, this literature review, it was hoped, might provide insights into institutional research activities.

A conceptual framework for the empirical investigation structured the analysis around four institutional decision processes: (1) resource acquisition, (2) resource allocation, (3) managerial control, and (4) accountability. The choice was made also to review the literature from the standpoint of these potential uses for cost analysis. In doing so, it was determined that few authors addressed the uses of cost analysis in specific terms. Most discussed methodology, but then often out of context.

Observations of particular interest to institutional researchers were drawn from this review: (1) inadequate attention is given in the literature to applications of cost analysis to administrative processes, (2) there is a general lack of awareness of the historical development of cost analysis, (3) communication of current developments is lacking, and (4) few writers seem willing to discuss

successes and failures of specific cost analysis applications.

A COMPARISON OF STAFF ATTITUDES TOWARD PROPOSED PARTICIPATIVE MANAGEMENT OBJECTIVES AT A COMMUNITY COLLEGE

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The feasibility of using Osgood's Semantic Differential (SD) in the evaluation of proposed institutional goals and objectives was tested at a metropolitan community college by comparing 13 female classified staff and 10 male administrators' attitudes toward 12 randomly selected collegewide objectives. Ten adjective pairs were used to generate SD evaluative dimension scores to determine (1) the general attititude of the two groups toward the objectives, (2) the relative attitudes (rank) given to each objective by the groups, (3) the relative value (good-bad, valuable-worthless) and credibility (believable-unbelievable, successful-unsuccessful) of the objectives within groups, and (4) in the event a credibility gap existed, whether there was a significant difference betweeen the groups.

The results indicated that (1) general attitudes toward all objectives were positive for both groups, but the classified staff had more positive scores for all objectives (*t*-test for difference of means), (2) the relative importance of each objective was significantly different between the groups (Spearman rank correlation coefficient), (3) a significant credibility gap did exist within the groups—all objectives were judged to be more valuable than believable or successful (Friedman 2-way Analysis of Variance), and (4) the credibility gap scores were significantly higher for administrators on one objective and approached significance on three others (extension of the median test).

Generally, the results show that the persons responsible for developing collegewide objectives at a community college face an unenviable task. First, administrators, who may eventually be charged with implementation of the objectives, have consistently less favorable attitudes toward the objectives than do classified staff. Second, the relative importance of the objectives is greatly different for the two groups. The credibility gap scores are a third indication of possible trouble, indicating a cynical "it may be good, but it'll never work here" attitude. Among administrators, the prevalence of the credibility gap may point to long-standing behavior patterns which may be difficult to change.

The results support the continued use of the SD technique in the measurement of attitudes toward institutional objectives. The consistency and sensitivity of this method makes it ideal for a detailed analysis of attitudinal variables.

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THE DYNAMICS OF SUCCESS EXTENDED OPPORTUNITY PROGRAMS AND SERVICES IN CALIFORNIA COMMUNITY COLLEGES

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This paper presents findings from the first systematic evaluation of California Community Colleges' Extended Opportunity Programs and Services (EOPS). EOPS includes financial aid, tutoring, counseling and other special services designed to assist individuals affected by language, social, ethnic or economic "disadvantages." The study included profile and multivariate analyses of survey data obtained from administrators, faculty, counselors, and students in all of the 93 participating colleges, and case studies of 12 of these colleges representing the diversity of EOPS.

This paper emphasizes (1) those methodologies and measurements found to be especially useful in the evaluation of such programs as EOPS, and (2) those program features and institutional characteristics found to be strongly associated with relatively successful and unsuccessful EOPS. The paper also addresses several values intended by the study: (1) the testing and validation of methodologies and measurements useful in the evaluation of systemwide and localized programs such as EOPS, (2) a holistic assessment of the effectiveness of a large statewide effort to provide programs and services established to attract and retain new students in higher education, and (3) the identification of replicable characteristics of succcessful EOPS for the sake of profitable emulation elsewhere.

THE EFFECTS OF PRICE DISCRIMINATION ON THE ELASTICITY OF DEMAND FOR HIGHER EDUCATION

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Higher education has faced and weathered many crises. In the past, the solution, more likely than not, was an appropriation or approval of a larger budget. During the past year or so, those traditional sources of support upon which higher education had relied—local, state, and federal governments as well as private philanthropy—have proved unequal to meet the current financial needs of our colleges and universities. Indeed, in many cases, the legislatures have approved sharply reduced budgets which will drastically affect the educational performance and mission of our colleges and universities.

What can we do about this situation? If higher education is to continue to maintian its vitality, it must look more to itself for support. One possible solution that colleges and universities may adopt is that of differential tuition pricing. This article is based on an investigation of the effects that differential tuition pricing has on the elasticity of demand for higher education.

Basically, differential pricing is a form of price discrimination. It is the sale of the commodity

at two or more prices. Differential pricing in higher education could take the following forms: (1) institutions could charge different rates for the same services to different classes of students, (2) institutions could charge different rates for different services to the same class of students, and (3) colleges and universities could charge different rates for the same services to the same class of students.

Because of the apparent paradoxical relationship between price and enrollment in higher education, at least in this particular market area, it is possible that factors other than price may have a more significant effect upon demand than the level of tuition. Some colleges have been able to differentiate successfully their services. They have been able to maintain an enrollment of sufficient size to generate the required revenue to cover expenditures. More research is needed before we can develop an effective demand function for higher education. However, we need not be afraid that a modest increase in tuition will necessarily precipitate a wave of transfers by the student body. Differential tuition pricing is far more suitable than an across-the-board increase, because the former is both more equitable and more efficient than the latter.

DIFFERENTIAL ANALYSIS OF RESEARCH OUTCOMES: USE OF CITATION ANALYSIS FOR QUALITY ASSESSMENTS

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The purpose of the project was to explore the usefulness of a citation analysis of the journal publications of specified groups of faculty members as one tool for the differential analysis of graduate programs of education. The proposed procedure illustrates three of the forms that useful research outcome specifications might take: (1) differentiating strengths in subfields, (2) evaluating the centrality of the contribution to knowledge development in the given fields, and (3) assessing the relative emphasis on dissemination to research colleague versus practitioner audiences. Although this procedure is subject to some time lags, perhaps on the order of three to five years, these are appreciably less than those that underlie more global rating procedures.

Although this project deals with the outputs of only one institutional function (that is, research) the basic strategy is applicable to the entire range of institutional functions. Fundamentally it involves (1) delineation and specification of desired outcomes, (2) identification of relevant and observable products, (3) utilization of publicly available data sources, and (4) use of information retrieval systems. Experience in the systematic assessment of research activity by means such as those reported, perhaps involving cooperative institutional efforts, could provide a basis for the development of more comprehensive approaches to evaluating institutional outcomes.

POLICY PLANNING TRADE-OFFS IN AFFIRMATIVE ACTION FACULTY RECRUITMENT

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This paper describes the rationale underlying design, development, and preliminary use of an affirmative action faculty recruitment simulator. Faculty turnover, mix targets, permissible hiring rates, and time-to-target interact in policy trade-offs as the academic administrator designs a recruitment strategy with nomograms or at an interactive computer terminal. This approach helps dispel emotional extremes in recruitment and provides systems insights to overall emloyment dynamics.

In the field, attention to affirmative action has been on getting started and on determining where the initial hiring emphasis must be placed. The complementary analytical framework presented in this paper should assume increasing pertinence as attention shifts more critically to timetables and implications of the hiring policies initially formulated. However, when a wide variety of potential users were contacted, they rather uniformly expressed no immediate desire to implement, for social and timing reasons!

In an overall sense, this project has added a further example of the application of a computer-mediated analytical framework to social problems, and, in particular, it has produced a tool in behalf of affirmative action. In addition, it has added the further attempt to link studies with application.

NOTE: This paper is based in part on the author's extension of the analytical framework of a project at the Florida State University on which the author served in early 1975 while on leave from SUNY at Stony Brook, New York. In early 1976 he joined the University of Toledo where he is continuing the work.

PROJECTING THE CONSEQUENCES OF TENURE AWARDS

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In this study, personnel flow is viewed as a function of tenure. The process is analyzed using a Markov process to represent the situation. The model is explained using three states (nontenured, tenured age less than 55, and tenured age 55 or more).

The model can be used to obtain iterative and long-run answers based on manipulation of coefficients in the model. Next, results also are presented using a more complex model. Problems inherent in the model and its

data based requirements are discussed.

The main advantages of conducting such an analysis are that it can (1) reveal characteristics of personnel flow which may differ from long held myths, (2) identify key parameters of faculty flow for dialogue and decision making, and (3) demonstrate the interdependence of various parameters and the results of specific policy decisions.

A final section of the paper discusses the steps and options which can be made after one analyzes the local personnel flow situation using the procedures outlined.